DRAGON USER



The independent Dragon magazine

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July 1985

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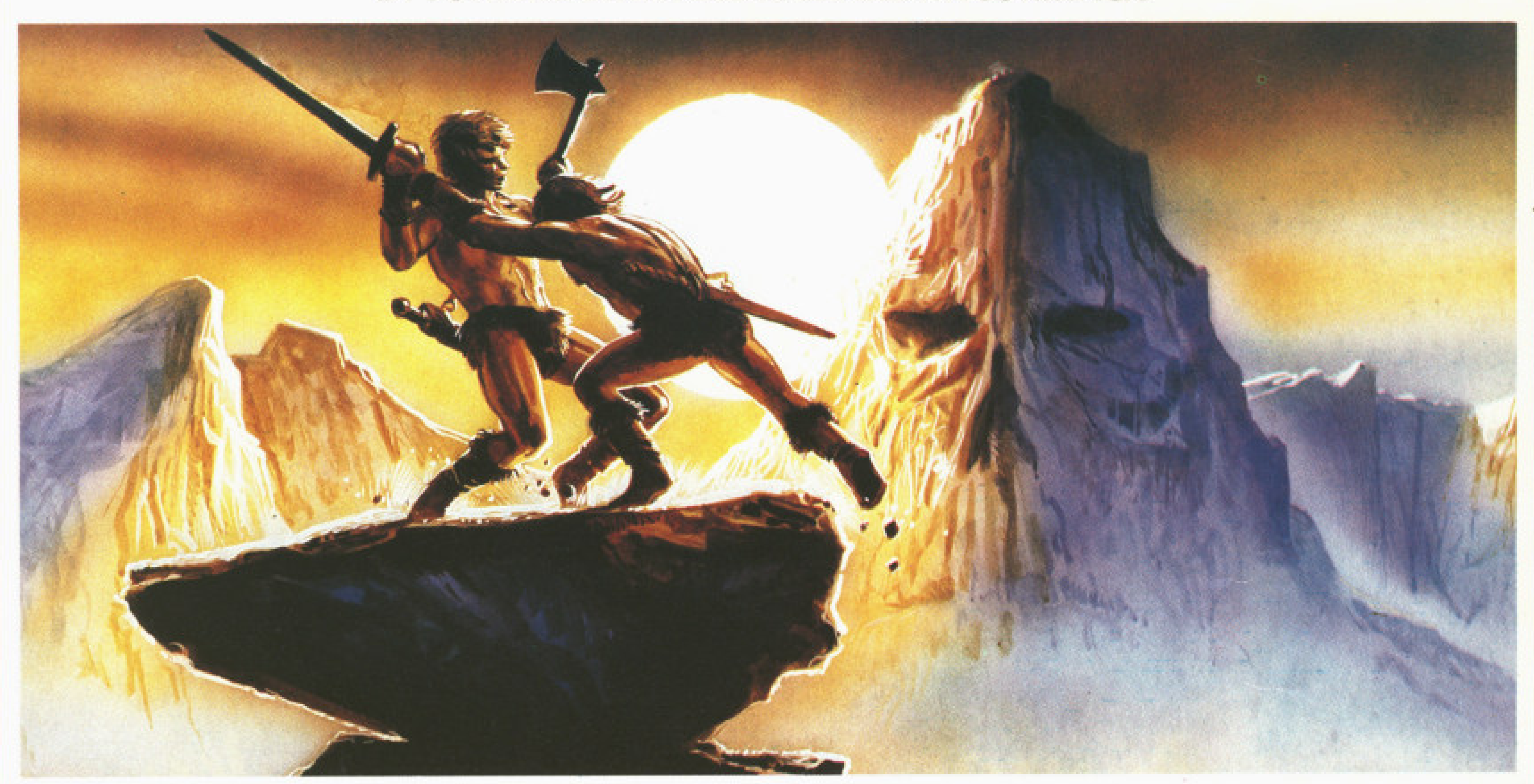
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How to submit articles

The quality of the material we can publish in *Dragon User* each month will, to a very great extent depend on the quality of the discoveries that you can make with your Dragon. The Dragon computer was launched on to the market with a powerful version of Basic, but with very poor documentation.

Articles which are submitted to *Dragon User* for publication should not be more than 3000 words long. All submissions should be typed. Please leave wide margins and a double space between each line. Programs should, whenever possible, be computer printed on plain white paper and be accompanied by a tape of the program.

We cannot guarantee to return every submitted article or program, so please keep a copy. If you want to have your program returned you must include a stamped, addressed envelope.

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Editorial

THE NEWS that Compusense has taken delivery of a 128K Dragon prototype may not cause much of a ripple outside Dragon circles.

But a Dragon 128K is far more than just an indication of how far computers, like clothes, follow the dictates of fashion.

For one thing it shows that something can be done with the Dragon — there is life after the 64.

Those readers who managed to catch a glimpse of Eurohard's Dragon 200 at the last 6809 show will remember that there seemed little to write home about at the time.

The case may have been restyled, but the keyboard was the same. So were all the internal workings — it was just a 64 in a new box. The only real difference is the addition of an LED to show when the computer is turned on.

But it now turns out that the 64's RAM chip could accommodate 128K of memory all along. So why hasn't Eurohard managed to put the extra chips in?

Let's face it, given the choice between a stylish case and a little red light on the one hand, and an extra 64K of memory on the other what would most Dragon users choose?

Another thing the 128K prototype proves is that Compusense at least is willing to show some commitment to the continued development of the Dragon.

On the software front, companies like Microdeal, Adventure International, Datacom and many others are also still supporting the Dragon — although most of the games being released at the moment are conversions of titles for other machines.

But the majority of the support which is responsible for the continued existence of the Dragon doesn't come from any of these companies — it comes from ordinary Dragon users. With all of its faults, the 6809 has thousands of loyal supporters.

Without the sort of commitment Dragon users have been showing over the last 12 months, there is no doubt that the machine would have been relegated to the museum like the Oric, the Lynx and others.

Letters

This is the chance to air your views — send your tips, compliments and complaints to Letters Page, *Dragon User*, 12-13 Little Newport Street, London WC2H 7PP.

Write on

WITH REFERENCE to my 'Writer' program published in May's *Dragon User*, readers may be interested to know that I can supply copies of listings 1 and 2 on a single cassette at £3.85 including postage and packing.

Please write to me at the address below, and not at the one contained in the listing.

Phil Brooks
1 Bodleian Close
Daventry
Northants

and on

MAY I congratulate Phil Brooks on his excellent 'Writer' extension interpreter program.

It is a pity that the manufacturers did not include a similar routine as a standard part of the Dragon's basic interpreter.

May I point out one small error in the accompanying article, though? EXEC 30596 causes the machine to crash. The machine code begins at location 30597 and therefore you should EXEC 30597 to install the program. Similarly you should CSAVEM"WRITER", 30597, 32767, 30597. Then upon reloading typing EXEC will install the routine.

S J Jones
35 Hillingford Avenue
Great Barr
Birmingham B43 7HP

Users USA

THERE IS now a Dragon User Group in the United States. The name of the group is "DRAGONET", and currently has a membership of approximately 50 subscribers. The group is headed by myself and I am currently enlisting the support of Dragon User Groups throughout the world.

DRAGONET will be publishing a monthly newsletter for all of its subscribers as well as other user groups. A national user group was greatly needed here in the US!

We are currently expanding our facilities to incorporate a Users' Bulletin Board System via telecom, and will be supporting users of OS-9, FLEX, and other features of the Dragon, which has until now been little or none here in the US. Subscription is free, and open to all!

All enquiries should be made to: Dragon Users' Group, c/o Wayne H. Schnell, 1011 Louisa Street, New Orleans, LA. 70117, USA.

Wayne H Schnell

OS9 America

DRAGON USERS running OS9 may be interested in the existence of an American OS9 User's Group. The address is OS9 Users' Group, PO Box 7586, Des Moines, Iowa 50322, USA.

Membership costs $25 per year (but may be more for non-US residents) and for this you get five or more issues of the newsletter, and access to various public domain OS9 software programs of which there are 10 disks currently available, and 25 or more planned for the near future. The group charges $3 per disk for handling, but again this may be more for postage outside the USA.

Robin Hamilton
113 Valley Road
Loughborough
Leicestershire LE11 3PY

Convert

I REFER to the "Conversion" program on page 31 of the April issue.

Unless used in the USA, the results of the gallons/litres conversion may cause some confusion. When dealing with Imperial gallons, the factor 4.546 will have to be used instead of 3.7854 in lines 760, 770, 840 and 850.

J Jeffries
10 Highlands Drive
Maldon
Essex CM9 6HX

Patch problem

REGRETTABLY, the gremlins got at the DRAGONDOS patches in the May 85 issue of *Dragon User*. The following are the corrected values (changes underlined):

Fault 1: +00BF 97

Fault 6: +001C D0 9D D0 CF

Problem 2, Patch b: +BFEF

There was also one error where documentation and patches did not keep pace:

Problem 4: replace line +179D with +1795 20 E5 12

Only this latter error should have caused a problem, resulting in PROTECT not operating correctly.

Philip Scott
4 Badgerwood Drive
Frimley
Camberley GU16 5UF

Fantasy Fight

IN REPLY to Mr Vine's plea for help in May's *Dragon User*, I have discovered three useful memory locations which make *Fantasy Fight* somewhat easier, as even the best games players would have difficulty in entering more than 15 of the 35 screens.

After loading the game normally press RESET and: POKE &H60D6, LIVES (0-16); POKE &H60E9, WEAPONS (0-127); POKE &H60C7, START ROOM (1-35) 29 is last room; Then EXEC 24718.

If more than 16 lives are entered then the extra men are drawn in program memory area, which could cause crashing. Also if more than 127 weapons/keys are collected you are left with none.

Clive Brace
8 Horners Croft
Greenleys
Bucks MK12 5DB

Users and repairers

HAVING JUST read the June issue of your magazine, I would like to answer the points raised in your Editorial.

I can only agree that software for the Dragons is becoming hard to find, but I don't think that the loss of a company like Websters, who have studious-rial for a long time, is any great loss to the Dragon scene.

There is still a lot of very good software being produced, even if much of it is available only by mail order, and a few more rats leaving the ship doesn't necessarily mean that it is just about to sink completely.

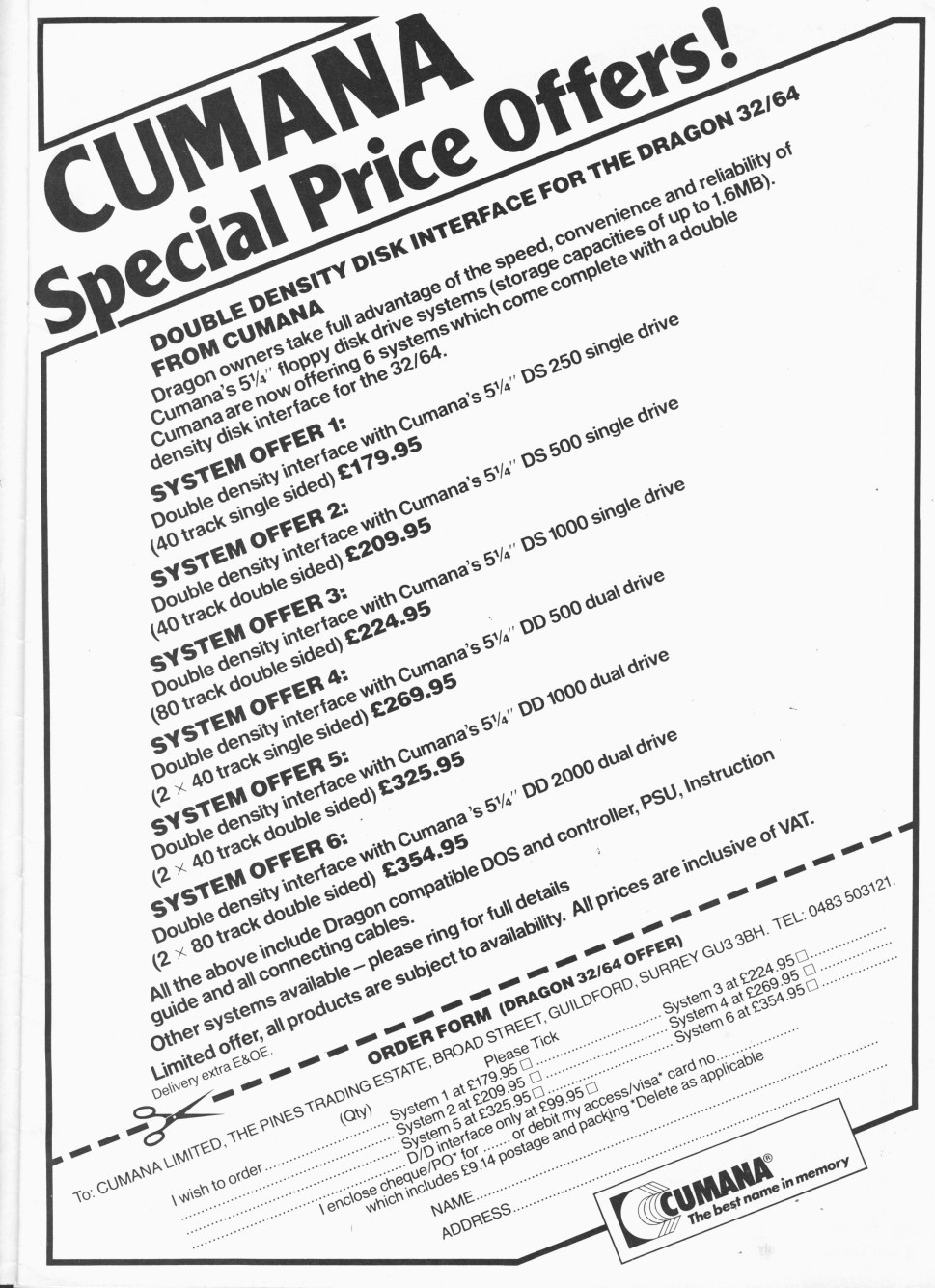
However, the main point that you raise, lack of service and repair facilities for the Dragons, isn't really valid.

We started the Dragon Users Group almost a year ago, with the intention not only of providing a means of communication between Dragon owners, but of providing help with Dragon-related problems, and that most certainly includes repairing sick Dragons if we can!

We aren't a commercial Group. Our £7.50 per year membership charge covers only the cost of producing and distributing the monthly copy of "Dragon Update", but we guarantee to do our best to find answers to ANY Dragon problem, and that means hardware as well as software. Having several electronics engineers in the Group, we can carry out most Dragon repairs at cost plus postage (I've had three to repair this week alone!), and in a lot of cases we can advise members on diagnosis and repair of their own machines. This service is, naturally, restricted to Group Members. It wouldn't be economic to make it a general offer, and in any event, I have no intention of treading on the toes of those few companies who (try to) make a living out of computer repair work, but we DO exist, and we will continue to do so as long as thee is a Dragon owner who needs us.

If anyone is interested in joining the Group, all they need to do is write or phone me for details. Although we started off as a "national" group, we now have members in most European countries and in the States, and members ages range from 11 to 74 . . . we try to cover all possible interests.

Paul Grade
National Dragon Users Group
6 Navarino Road
Worthing
Sussex


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Add-ons and repairs

COMPUSENSE has appointed Race Electronics as a National Service Centre for the Dragon 32, 64 and peripherals.

In addition, Compusense will be distributing a wide variety of hardware add-ons made by the Welsh company.

Ted Oprychal, Compusense's managing director, said that Race had been appointed "because they were manufacturing Dragons last year, and they know a lot about them."

Dragon owners who wish to take advantage of the new service should contact Race Electronics direct. There will be a minimum charge of £20.

Compusense will also be setting up a local repair network, and would like to hear from any companies capable of doing such work.

The new add-ons from Race include an RS232 Interface Unit, a Sideways ROM Cartridge, an EPROM Programmer (all for the Dragon 32), and a Dragon expansion Box System for the Dragon 32 and 64.

Race also manufacture a floppy tape microdrive system, and prototyping cards for the DIY enthusiast.

The RS232 Interface will allow communication between a Dragon 32 and any other micro which uses the RS232 standard. It also means a 32 can control serial line printers, or connect to compatible modems. It will sell for around £50.

The sideways ROM Cartridge allows the user to hold up to four sets of EPROM banks simultaneously in memory, ready for instant access. It will cost around £45.

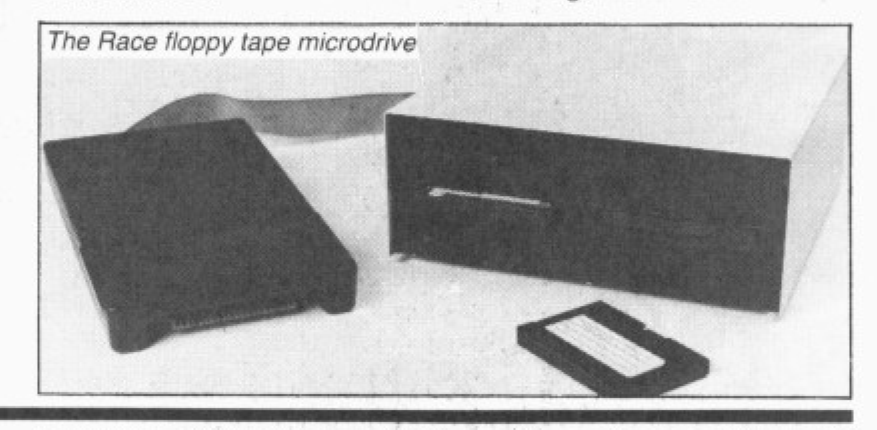
The EPROM Programmer will allow users to blow their own EPROM chips, at a cost of around £60.

The Expansion box will allow the use of up to four cartridges at the same time. Each cartridge can then be individually selected from the keyboard. It will cost around £180.

The floppy tape microdrive system will give the users far faster access than audio cassettes can provide, at a lower price than disk.

The prototyping cards are available with tin plating at £6 and gold plating at £7. Compusense will also be selling a Project Case to protect the cards, at £3..

Race Electronics are at Race House, Lanelay Road, Talbot Green, Pontyclun, Mid Glamorgan CF7 8YY.


The Race floppy tape microdrive

Dragon 128K

COMPUSENSE has taken delivery of a prototype 128K Dragon.

The machine is basically an upgrade from a 64 to a 128K micro. The SAM chip used in the Dragon already has facilities for banking other memory, so the upgrade is just a matter of adding extra memory chips and changing the addresses.

Additionally, Compusense will also be developing an upgrade for the Dragon 32, which will make it a 96K machine.

Apparently, the 32 cannot be given 128K because of the video chip used.

Compusense's next project will be an onboard disk controller and hard disk interface.

Compusense is at PO Box 169, 286D Green Lanes, London N13 5XA.

National user group

THE NATIONAL Dragon Users Group costs £7.50 per year, which includes a monthly news letter covering software and hardware projects, hints and tips, articles and reviews.

Members can also write or phone in with any Dragon problems. Write to Paul Grade, National Dragon Users Group, 6 Navarino Road, Worthing, Sussex.

Bulletin north east

CoCo BBS is a new bulletin board designed for CoCo and Dragon users, especially those in the North East of England.

The system runs on a CoCo at present, but a Dragon 64 will be hooked in in the near future. Baud rate is 300/300 now, with 7 bit even parity, but either 1200/75 or 1200/1200 baud rates will be added once the 64 is on line.

There are the usual message facilities allowing 2.5K in 10 lines. Users can also upload and download basic programs.

The board goes on line at 9 pm Mondays to Thursdays until 10 am. From 9 pm Fridays it stays open until 9 am Monday mornings.

CoCo BBS can be contacted on 091-265 1944, or write to 186 Biddlestone Road, Heaton, Newcastle on Tyne, NE6 5SP.

Adventurer's Club

THE ADVENTURER'S Club is a new organisation aimed at relieving the sufferings of adventurers.

Membership of the club costs £10 per year. This includes 12 issues of the *Member's Dossier*, a monthly newsletter aimed at keeping readers informed of the latest happening in the adventure world.

The *Dossier* will also include reviews and tips for adventures. The first issue, 18 pages long, includes the first part of an in-depth study of *El Diablero* for the Dragon 32/64, with a number of very useful hints.

Henry Mueller, the Adventurer's Club Secretary, himself started with a Dragon and says that he has a great deal of fondness for it.

The Club also runs a phone-in adventure help service for members on 01-794 1261.

The Adventurer's Club is a 64c Menelik Road, London NW2 3RH.

Cotswold comms

COTSWOLD Computers has two new communications packages for the Dragon 32 and 64.

The first is a full feature viewdata package containing a British Telecom approved modem and a software cartridge.

The cartridge software allows log on and off and terminal mode. It also lets the user save Prestel screens to tape, print the screens, prepare messages on an offline buffer and download software.

The Prestel Viewdata package costs £99 inclusive of VAT and delivery.

The other product from Cotswold is MODEM, a disk communication package running on OS-9 for the Dragon 64.

A cassette based program is also supplied which gives access to OS-9 disk files from Dragon Basic, and there is a comprehensive manual included. MODEM costs £29.95.

Cotswold Computers is at 6 Middle Row, Chipping Norton, Oxfordshire OX7 5NH.

Dragon adventures

Jason Orbaum *takes another trip to the vaults to look at some classic Dragon adventure games*

Pi-manic

Adventure: *Pi-Mania*
Supplier: *Automata*

THE ORIGINAL "Prize" adventure, the one that sparked off a series of similar programs with prizes, none of which quite came up to the splendour of the Golden Sundial of Pi, crafted in gold by Barbara Tipple.

However, if the rival prizes didn't quite come up to this standard, the adventures, almost without exception, were about 5,000 per cent better!

Pi-Mania has very little internal logic, several random elements, stunningly brief location descriptions, and takes the most amazing length of time to play.

The reason for this time expenditure is that the response is chronically slow, not that the player will spend a long time thinking, as there is really very little to think about that can logically be worked out. The problems seem to rely on trial and error tactics and there is the "Pi-Man" (an animated pest) to throw an extra spanner in the works.

After you have worked out the movement system (this is possibly the best puzzle in the adventure) making a move takes a super fast 40 seconds giving one just enough time to lob the cassette into a passing incinerator — a process I heartily recommend! (I exaggerate of course about the time, it's really about 38 seconds!)

Given the superb adventures now available for the Dragon, why you should ever give this one a second look escapes me, unless of course you think you could win that £6,000.



Wizard

Adventure: *Keys of the Wizard*
Supplier: *Microdeal*

THIS IS an adventure that puzzles me — I know what I have to do, and have almost done it, but haven't had to solve any problems yet!

The game, a real-time action D&D-type game, is also a pure text adventure of, at first sight, considerable verbosity.

There are two basic aims, and therefore two ways of playing the game; the first is to collect all the treasure in the adventure's domain and take it to the sanctuary, and the second is to kill all of the various inhabitants of the area (except the unicorn who is supposedly friendly) in a bloodthirsty, and noisy, series of battles.

The game talks to you (not very often, and with a very limited vocabulary I must admit) and has several other beeps and bangs to keep you awake. The presentation is superb, even allowing you to view information that has recently scrolled off the screen.

The parser (that's the bit that turns your English commands into things that the computer understands) is fairly standard (Verb/Noun, no Infocom stuff here), and the response, being in machine code, is nearly immediate.

The adventure, when it was released early in 1984, was the best available for the Dragon. Since its release it has been overshadowed by some incredibly good adventures. This does not mean that it is not an adventure worth buying; it most certainly is.

To sum up them, not an adventure for the puzzle player, more for those of us who like a colourful jaunt around another land, pausing only to pick up treasures and, of course, massacre the odd creature.



Franklin

Adventure: *Franklin's Tomb*
Supplier: *Salamander Software*

ANOTHER classic adventure, this time for the adventurers who have got past the beginnings of their craft but are not yet ready to take on the massed forces of a *Zork* or *Snowball* (neither of which, unfortunately, look like ever becoming available to the Dragon owner).

This game is the first in a series of three (the equally competent sequels are *Lost in Space* and *Fishy Business*) and the adventurer is cast in the roll of Dan Diamond, private detective. You have received a note saying "Please come. You're our only hope"

IT IS impossible to review all the other Dragon adventures on the market but here are my own personal ratings for several more. These are, of course, only personal so if you disagree with several of my reviews then these will probably not be of use to you.

The terms used are here explained:

GENERATION refers to the type of game along these lines:

1st) Text only (the purist's adventure).

2nd) Arcade adventure (3-D or "Tutankhamun" style).

3rd) Text with pictures (for those with little imagination or descriptive power).

4th) Multi-player adventures.

PARSER refers to the complexity of the sentences the game can understand.

LOGIC refers to the puzzles and whether they can be considered to be fair.

PLAYABILITY is a rating of how much chance the game has of keeping you up until the small hours playing.

MOOD is a rating of the pictures on a 2nd or 3rd generation adventure, and the text on a 1st generation.

The GENERAL rating is the same as that which would accompany a full review, and, like all the others is out of five.

As a final note, many of these adventures have been available for quite some time now and as such may be difficult to acquire. Also, it should be pointed out that during grading no allowance has been made for age of program.

Adventure: ***The Cricklewood Incident***
Supplier: Salamander Software
Generation: 1st
Parser: 2
Logic: 1
Playability: 3
Mood: 3
General: 2

Adventure: ***Lost in Space (Franklin II)***
Supplier: Salamander Software
Generation: 1st
Parser: 3
Logic: 5
Playability: 4
Mood: 5
General: 5

Adventure: ***Fishy Business (Franklin III)***
Supplier: Salamander Software
Generation: 1st
Parser: 3
Logic: 4
Playability: 5
Mood: 4
General: 4

Adventure: ***The Emperor Must Die***
Supplier: Phoenix Software
Generation: N/A (there are two programs, an arcade game and an adventure, the successful completion of one takes you into the other, which is a 1st generation adventure with map on call, all ratings apply to the adventure)
Parser: 1
Logic: 3

with directions to a graveyard crypt. Suddenly, the ground gives way beneath you, and you are in the tomb . . .

The actual instructions that come with the game are done in a hilarious Raymond Chandler style, but this prose style is totally different from that used to describe the locations. Indeed, the detective theme does not re-occur within the adventure.

But what the game lacks in humour, it more than makes up for in puzzles of varying complexity, from a fairly easy starter, to the brilliance of the gallery.

I found the game a pleasure to play from beginning to end, and, although it was written in Basic, the responses were tolerable, and the screen display excellent (the format used has since been copied on several occasions).

I recommend this game to all but the hardened adventurer, who will find it too easy.



Doom

Adventure: *Caverns of Doom*
Supplier: *Microdeal*

THIS Microdeal adventure was released at the same time as *Syzygy* (reviewed elsewhere) and although another big adventure (100 different rooms), is not as likely to become a classic.

However, that does not affect the game's merits and they are considerable. The descriptions are pleasant, if not verbose enough for me, and the general mood conjured up is ideal.

Your task is quite simply to escape from an abandoned and crumbling mine complex . . . however, that may be more difficult than is at first suspected.

The response is fast — the game is in machine code — and the screen layout is absolutely superb (green on black, windowed screen).

Again, Microdeal have had the very good sense to list the commands on the cassette inlay, which saves a lot of time and energy hunting commands.

This is quite simply an excellent first generation (text only) adventure for the average adventurer. The game is selling for a fiver and this is a fiver that could be spent on many worse things than this.

It is available from your local Dragon supplier (if you still have one) or the Microdeal mail order service, which appears to have been designed by Harold Pinter judging by my experiences!



Syzygy

Adventure: *Syzygy*
Supplier: *Microdeal*

THIS IS Microdeal's latest adventure for the Dragon, and my initial impression is to say it's the best third generation (text with graphics) Dragon adventure available, if not the best third generation adventure I've seen for some time.

Stuck aboard the Death-Star, the blurb runs, you have already had one near fatal encounter with Darth Vader and your strength is nearly gone . . . a huge task lies before you as you attempt to destroy the Dark Lord of the Sith and escape the Death-Star.

No trouble with vocabulary — it is all there on the instruction leaflet. It is just a matter of using the right words at the right place.

The game is gigantic; there are 300 locations to explore, and over 250 pictures (as many of the corridors look alike) and the movement from location to location is instantaneous.

The screen (PMODE 4) is set out with an Inventory on permanent display, a clear small picture top right and the text input and cursor below all this.

The puzzles have been clearly thought out; the graphics have been excellently designed, and the whole game plays superbly.

It is a great adventure, although admitedly very difficult, and is a pleasure to play. If the Dragon adventurer doesn't own this one then they ought to be ashamed of themselves — buy it as once!



Pulsar

Adventure: *Escape from Pulsar 7*
Supplier: *Channel 8 Software*

THIS IS one of the Brian Howarth mysterious adventure series so often mentioned in the Adventure Trail.

This one has the adventurer on board a spaceship with a lethal alien who has escaped and killed all of the crew save you. All you have to do is escape in the shuttlecraft.

The game is played with text on the hi-res screen, and the Dragon 64 version produces graphics.

The display is very good except when printing up the location descriptions, at which point it jerks and flashes alarmingly.

The game is well structured and written, with puzzles of good design and increasing complexity, although the descriptions of the locations leave a lot to be desired.

The response is fast, the parser simple but effective and the feel just right, clinical, yet eerie.

Channel 8's entire range has now been taken over by Adventure International — it's good to see they are still available.



Playability:	**1**
Mood:	**0**
General:	**1**

Adventure: ***Downland***
Supplier: Microdeal
Generation: 2nd

Parser:	**N/A**
Logic:	**5**
Playability:	**5**
Mood:	**5**
General:	**5**

Adventure: ***Time Bandit***
Supplier: Microdeal
Generation: 2nd

Parser:	**N/A**
Logic:	**2**
Playability:	**5**
Mood:	**5**
General:	**4**

Adventure: ***The Ring of Darkness***
Supplier: Wintersoft
Generation: 2nd/3rd

Parser:	**3**
Logic:	**3**
Playability:	**1**
Mood:	**2**
General:	**3**

Adventure: ***Poseidon***
Supplier: Dragon-Data (I have no idea who now sells it)
Generation: 1st

Parser:	**3**
Logic:	**5**
Playability:	**4**
Mood:	**4**
General:	**4**

Adventure: ***Alcatraz II***
Supplier: Microdeal
Generation: 2nd

Parser:	**N/A**
Logic:	**2**
Playability:	**4**
Mood:	**3**
General:	**4**

Adventure: ***Ultimate Adventure***
Supplier: Microdeal
Generation: 1st

Parser:	**2**
Logic:	**1**
Playability:	**1**
Mood:	**1**
General:	**1**

Adventure: ***Pettigrews Diary*** **(in three parts on one cassette)**
Supplier: Shards Software
Generation: 2nd, 1st and N/A (the third program is a series of tests) respectively

Parser:	**N/A, 3, N/A**
Logic:	**2, 3, 4**
Playability:	**3, 2, 3**
Mood:	**3, 4, N/A**
General:	**3, 3, 4**

Adventure: ***Wings of War***
Supplier: Salamander Software
Generation: 1st

Parser:	**2**
Logic:	**4**
Playability:	**4**
Mood:	**4**
General:	**4**

Adventure: ***Fantasy Fight***
Supplier: Cable Software
Generation: 2nd

Parser:	**N/A**
Logic:	**4**
Playability:	**5**
Mood:	**5**
General:	**5**

Looking through the Dragon's windows

***Brian Cadge** with two programs to help you put windows on your Dragon*

THE FACILITY to have several 'virtual' screens, or windows displayed at once is usually only found on the more expensive computers. The prcgram presented here gives this facility on the Dragon micros. Up to five separate windows can be used at once, and there are several new Basic commands to handle defining and utilising the windows. The window facility is not only very useful in programs, but also comes in handy when debugging software. For example, two windows could be set up, one occupying the top 12 lines, the other the bottom four lines. Listing could be sent to the main window, whilst editing is done in the smaller one. All windows have independent attributes, which means they have their own cursor position and inverse/normal characters, and all are capable of scrolling independently. Windows can overlap, but this is not generally very useful.

The program is loaded into reserved RAM at the top of memory. One EXEC call is made to initialise it and from then on all text output goes to the 'current' window. At startup this is defined as the whole screen and so will not look any different. To define your own window the WINDOW command is used. It has the following parameters: **WINDOW n,x1,x2,y1,y2,l** where 'n' is the window number (0 to 4), 'x1' is the left edge screen column, and 'x2' is the right edge column. The screen columns run from 0 to 31 and the rows from 0 to 15. 'y1' is the top row of the window, and 'y2' is the

```
10 ' BASIC LOADER PROGRAM
20 CLEAR 200,31799:CLS:PRINT
   "*LOADING CODE ...":PRINT@0,"";
30 FOR I=31800 TO 32654
40 EXEC 48053:READ A:CS=
   CS+A:POKE I,A
50 NEXT
60 IF CS<>93674 THEN PRINT
   "DATA ERROR - CHECK LISTING!":
   SOUND 1,5:STOP
70 CLS:PRINT@256,"LOAD
   SUCCESSFUL":EXEC 31800
80 END
90 DATA 134,126,183,1,103,142
100 DATA 125,238,191,1,104,158
110 DATA 176,16,190,127,143,16
120 DATA 159,176,198,20,166,128
130 DATA 167,160,90,38,249,142
140 DATA 1,42,16,142,1,52
150 DATA 166,128,167,160,140,1
160 DATA 52,37,247,134,4,183
170 DATA 1,42,142,124,144,191
180 DATA 1,43,142,124,171,191
190 DATA 1,45,134,2,183,1
200 DATA 47,142,124,192,191,1
210 DATA 50,142,124,163,191,1
220 DATA 48,189,132,52,189,189
230 DATA 220,126,131,113,87,73
240 DATA 78,68,79,215,85,83
250 DATA 197,87,67,76,211,67
260 DATA 85,82,83,79,210,88
270 DATA 80,79,211,89,80,79
280 DATA 211,128,206,42,3,126
290 DATA 137,180,142,124,184,126
300 DATA 132,237,124,211,125,70
310 DATA 125,137,125,89,192,68
320 DATA 42,3,126,137,180,142
330 DATA 124,207,173,149,126,136
340 DATA 116,125,220,125,229,189
350 DATA 142,81,193,5,36,103
360 DATA 182,127,99,183,127,98
370 DATA 247,127,99,189,137,170
380 DATA 189,142,81,193,31,36
390 DATA 84,247,127,101,189,137
400 DATA 170,189,142,81,193,32
410 DATA 36,71,241,127,101,35
420 DATA 66,247,127,102,189,137
430 DATA 170,189,142,81,193,15
440 DATA 36,53,247,127,103,189
450 DATA 137,170,189,142,81,193
460 DATA 16,36,40,241,127,103
470 DATA 35,35,247,127,104,127
480 DATA 127,105,157,165,39,9
490 DATA 189,137,170,189,142,81
500 DATA 247,127,105,127,127,106
510 DATA 127,127,107,189,126,83
520 DATA 182,127,98,183,127,99
530 DATA 57,198,7,126,131,68
540 DATA 189,142,81,193,5,36
550 DATA 244,247,127,99,189,126
560 DATA 43,189,125,253,159,136
570 DATA 57,189,126,43,189,126
580 DATA 23,189,126,33,189,142
590 DATA 81,241,127,96,34,26
600 DATA 247,127,106,189,137,170
610 DATA 189,142,81,241,127,95
620 DATA 34,12,247,127,107,189
630 DATA 125,253,159,136,189,126
640 DATA 83,57,198,8,126,131
650 DATA 68,39,25,189,126,43
660 DATA 189,142,81,193,8,34
670 DATA 172,93,38,4,198,128
680 DATA 32,14,134,16,90,61
690 DATA 203,143,32,6,189,126
700 DATA 43,246,127,100,127,127
710 DATA 106,127,127,107,189,125
720 DATA 253,159,136,189,126,23
730 DATA 189,126,33,124,127,96
740 DATA 124,127,95,182,127,96
750 DATA 183,127,97,79,231,134
760 DATA 76,122,127,97,38,248
770 DATA 48,136,32,122,127,95
780 DATA 38,233,189,126,83,57
790 DATA 189,126,43,246,127,106
800 DATA 126,140,54,189,126,43
810 DATA 246,127,107,126,140,54
820 DATA 13,111,39,1,57,50
830 DATA 98,52,54,189,126,111
840 DATA 53,54,57,52,6,182
850 DATA 127,103,187,127,107,198
860 DATA 32,61,142,4,0,48
870 DATA 139,182,127,101,187,127
880 DATA 106,48,134,53,134,182
890 DATA 127,102,176,127,101,183
900 DATA 127,96,57,182,127,104
910 DATA 176,127,103,183,127,95
920 DATA 57,52,54,182,127,99
930 DATA 198,7,61,142,127,108
940 DATA 48,133,198,7,16,142
950 DATA 127,101,166,128,167,160
960 DATA 90,38,249,134,32,125
970 DATA 127,105,38,2,134,96
980 DATA 183,127,100,53,182,52
990 DATA 54,182,127,99,198,7
1000 DATA 61,142,127,108,48,133
1010 DATA 198,7,16,142,127,101
1020 DATA 166,160,167,128,90,38
1030 DATA 249,53,182,141,186,189
1040 DATA 169,58,141,8,189,125
1050 DATA 253,159,136,141,214,57
1060 DATA 23,255,124,129,8,38
1070 DATA 49,182,127,106,38,26
1080 DATA 246,127,107,16,39,0
1090 DATA 135,182,127,100,167,132
1100 DATA 122,127,107,23,255,123
1110 DATA 182,127,96,183,127,106
1120 DATA 32,8,182,127,100,167
1130 DATA 132,122,127,106,23,255
1140 DATA 78,182,127,100,167,132
1150 DATA 32,98,129,13,38,28
1160 DATA 182,127,100,167,132,23
1170 DATA 255,95,127,127,106,182
1180 DATA 127,107,177,127,95,37
1190 DATA 4,141,74,32,71,124
1200 DATA 127,107,32,66,77,43
1210 DATA 21,129,32,37,59,129
1220 DATA 96,36,4,138,64,32
1230 DATA 2,128,96,125,127,105
1240 DATA 39,2,136,64,23,255
1250 DATA 12,167,132,23,255,33
1260 DATA 182,127,106,177,127,96
1270 DATA 37,23,127,127,106,23
1280 DATA 255,29,182,127,107,177
1290 DATA 127,95,37,4,141,11
1300 DATA 32,8,124,127,107,32
1310 DATA 3,124,127,106,57,189
1320 DATA 126,23,189,126,33,124
1330 DATA 127,96,182,127,103,198
1340 DATA 32,61,142,4,0,48
1350 DATA 139,246,127,95,52,20
1360 DATA 246,127,96,247,127,97
1370 DATA 246,127,101,49,133,166
1380 DATA 168,32,167,164,92,122
1390 DATA 127,97,38,243,53,20
1400 DATA 48,136,32,90,38,224
1410 DATA 246,127,101,182,127,100
1420 DATA 167,133,92,122,127,96
1430 DATA 38,248,57,0,0,0
1440 DATA 0,0,0,0,0,0
1450 DATA 0,0,0,0,0,31
1460 DATA 0,15,0,0,0,0
1470 DATA 31,13,15,0,0,0
1480 DATA 0,31,0,12,0,0
1490 DATA 0,0,31,0,15,1
1500 DATA 0,0,1,30,1,14
1510 DATA 1,0,0
```

bottom row. 'I' is optional and if used it should have the value '1', which means that this is an inverse video window, and all text sent to it will be in green on black, rather than black on green. This is generally more readable. The minimum size of a window is 2x2 characters, and the maximum size is the whole screen.

If any of the parameters are out of range, you will get a new error message, 'DF ERROR', meaning definition error. The WINDOW command defines a window's size, but to use the window you need to select it by using the USE command. This is followed by the number of the window to be used (0-4), so USE 2 would send all subsequent text to window 2 until another USE command was issued.

When using a particular window, it can be cleared by using the WCLS command (do not use CLS as this will clear the whole text screen). On its own this will clear the window to either green or black, depending on the setting of the inverse attribute for the particular window. WCLS n will clear the window to colour 'n' (0-8). Any other value generates an error message.

The PRINT@ command no longer has any meaning and so should not be used. Instead, use CURSOR x,y to position the cursor at column 'x', row 'y' in the current window. Note that x and y are relative to the window, so 0,0 is always the top left of the window, regardless of where the window is on screen. Attempting to position the cursor outside the window will cause an error.

HERE IS a summary of the new commands and functions. Items in <> are optional.

WINDOW n,x1,x2,y1,y2 <,I>	**define a window**
USE n	**Select window n**
WCLS <n>	**Clear window <to colour n>**
CURSOR x,y	**Put cursor at x,y in window**
XPOS	**Returns column position**
YPOS	**Returns row position**

Finally, there are two new functions. XPOS will return the current horizontal position of the cursor in the current window, and YPOS will return the current vertical position. Try PRINT YPOS,XPOS.

To use the program, type in the Basic Loader Program, taking care with the DATA statements and run it. It will stop and report if you have entered any of the DATA statements incorrectly, in which case you should recheck your listing. If all goes well an appropriate message is displayed and you are ready to use the new commands. The windows are predefined to useful settings, but you can change them as you need using the WINDOW command. For starters, try CLS 2:USE 4:WCLS and list the program.

The assembly language listing is included to show how the program actually works. The first section sets up the new Basic commands and redirects the print vector to the window software. The two main routines are PRINT which does the actual printing of a character, and SCROL which scrolls any section of the screen independently. The two main ROM routines used in the command handlers are GETNUM, which returns the value of the following number (variable or expression) in the 'B' register, and CKCOMA, which checks that the next character on a command line is a comma and produces a syntax error if it is not.

As it is the program supports up to five independent windows. This should be more than enough for most purposes, but as each window only takes seven bytes to store, many more can be added if required by a few simple changes to the assembly language listing (you will need an assembler to do this). This version of the software is not suitable for use alongside DOS — the program requires a few modifications for this.

Programs entered using the new commands should only by typed in with the extensions resident in the computer otherwise they will not be correctly tokenized and will not run.

```
2AC7                 *
2AC7                 * DRAGON TEXT WINDOWS BASIC
2AC7                 * EXTENSION PROGRAM V.1.1
2AC7                 *
7C38  7C38                   ORG    31800
7C38  89AA           CKCOMA EQU    35242     ;CHK FOR ,
7C38  8E51           GETNUM EQU    36433     ;B=VALUE
7C38
7C38 867E                    LDA    #126      ;PATCH IN
7C3A B70167                  STA    359       ;JUMP BLK
7C3D 8E7DEE                  LDX    #PRTJB    ;FOR PRINT
7C40 BF0168                  STX    360       ;ING CHARS
7C43 9EB0                    LDX    176
7C45 10BE7F8F                LDY    USRLOC
7C49 109FB0                  STY    176
7C4C C614                    LDB    #20       ;MOVE USR
7C4E A680            COPUS   LDA    ,X+       ;VECTORS
7C50 A7A0                    STA    ,Y+
7C52 5A                      DECB
7C53 26F9                    BNE    COPUS
7C55 8E012A                  LDX    #298      ;MOVE END
7C58 108E0134                LDY    #308      ;OF BASIC
7C5C A680            COSTB   LDA    ,X+       ;STUBS
7C5E A7A0                    STA    ,Y+
7C60 8C0134                  CMPX   #308
7C63 25F7                    BLO    COSTB
7C65 8604                    LDA    #4        ;NUMBER OF
7C67 B7012A                  STA    298       ;COMMANDS
7C6A 8E7C90                  LDX    #CMDS
7C6D BF012B                  STX    299
7C70 8E7CAB                  LDX    #DESP     ;DESPATCH
7C73 BF012D                  STX    301       ;ADDRESS
7C76 8602                    LDA    #2        ;NUMBER OF
7C78 B7012F                  STA    303       ;FUNCTIONS
7C7B 8E7CC0                  LDX    #FUNDP
7C7E BF0132                  STX    306
7C81 8E7CA3                  LDX    #FUNCS
7C84 BF0130                  STX    304
7C87 BD8434                  JSR    33844
7C8A BDBDDC                  JSR    48604
7C8D 7E8371                  JMP    33649     ;BASIC
7C90
7C90 57494E444F CMDS         FCC    /WINDO/,215
7C96 5553C5                  FCC    /US/,197
7C99 57434CD3                FCC    /WCL/,211
7C9D 435552534F              FCC    /CURSO/,210
7CA3 58504FD3        FUNCS   FCC    /XPO/,211
7CA7 59504FD3                FCC    /YPO/,211
7CAB 80CE            DESP    SUBA   #$CE
7CAD 2A03                    BPL    VALID
7CAF 7E89B4                  JMP    35252
7CB2 8E7CB8          VALID   LDX    #CMDAD
7CB5 7E84ED                  JMP    34029
7CB8 7CD3            CMDAD   FDB    WINDOW
7CBA 7D46                    FDB    USEWIN
7CBC 7D89                    FDB    WINCLS
7CBE 7D59                    FDB    CURSOR
7CC0 C044            FUNDP   SUBB   #$44
7CC2 2A03                    BPL    VALFN
7CC4 7E89B4                  JMP    35252
7CC7 8E7CCF          VALFN   LDX    #FNCAD
7CCA AD95                    JSR    (B,X)
7CCC 7E8874                  JMP    $8874
7CCF 7DDC            FNCAD   FDB    XPOSF
7CD1 7DE5                    FDB    YPOSF
7CD3
7CD3                 ********************************
7CD3                 *     NEW COMMAND HANDLERS     *
7CD3                 ********************************
7CD3
7CD3 BD8E51          WINDOW  JSR    GETNUM
7CD6 C105                    CMPB   #5
7CD8 2467                    BHS    ERROR
7CDA B67F63                  LDA    WININU
7CDD B77F62                  STA    TEMP
7CE0 F77F63                  STB    WININU
7CE3 BD89AA                  JSR    CKCOMA
7CE6 BD8E51                  JSR    GETNUM
7CE9 C11F                    CMPB   #31
7CEB 2454                    BHS    ERROR
7CED F77F65                  STB    X1
7CF0 BD89AA                  JSR    CKCOMA
7CF3 BD8E51                  JSR    GETNUM
7CF6 C120                    CMPB   #32
7CF8 2447                    BHS    ERROR
7CFA F17F65                  CMPB   X1
```

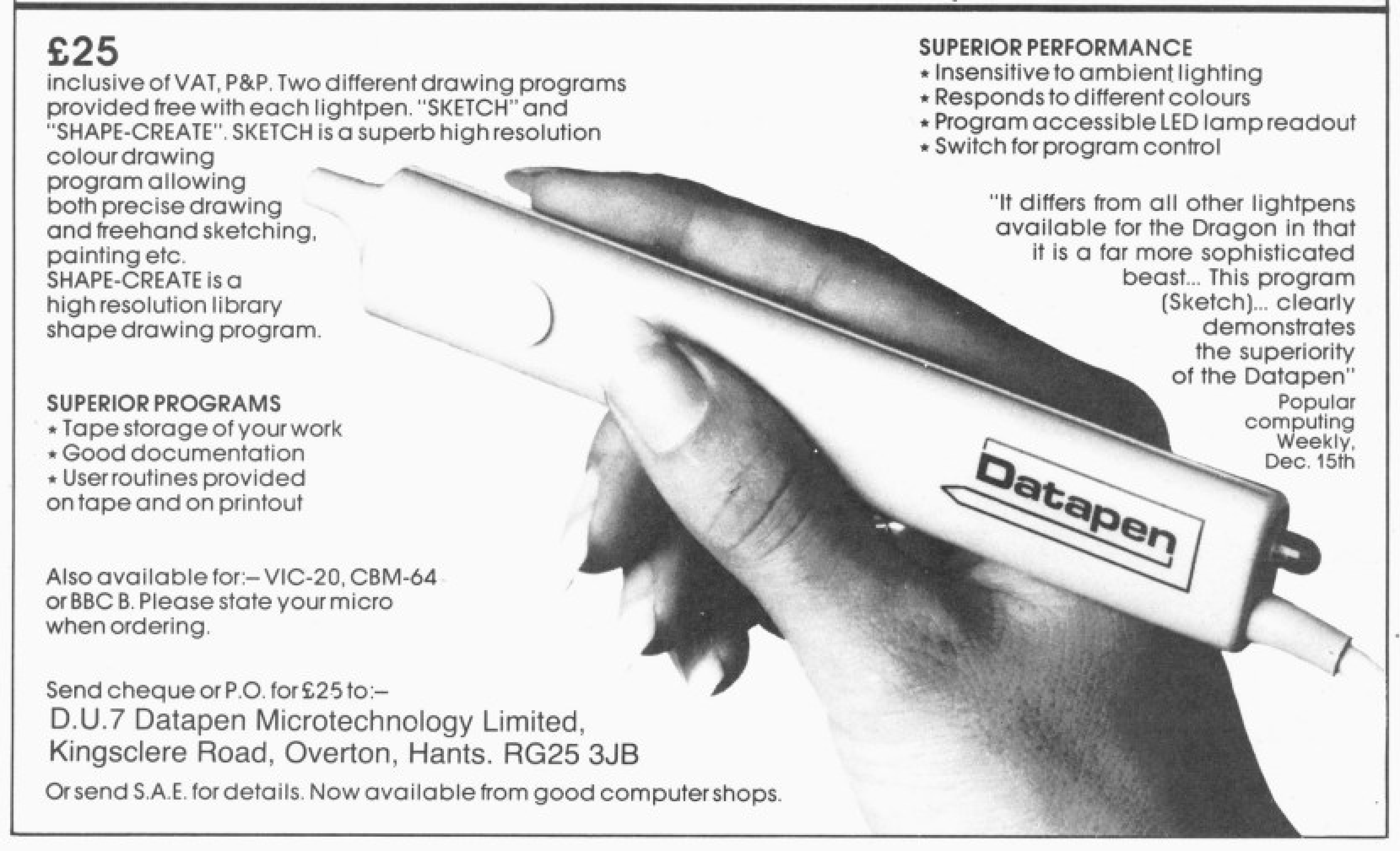


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73DFDU

```
7CFD 2342                 BLS    ERROR
7CFF F77F66               STB    X2
7D02 BD89AA               JSR    CKCOMA
7D05 BD8E51               JSR    GETNUM
7D08 C10F                 CMPB   #15
7D0A 2435                 BHS    ERROR
7D0C F77F67               STB    Y1
7D0F BD89AA               JSR    CKCOMA
7D12 BD8E51               JSR    GETNUM
7D15 C110                 CMPB   #16
7D17 2428                 BHS    ERROR
7D19 F17F67               CMPB   Y1
7D1C 2323                 BLS    ERROR
7D1E F77F68               STB    Y2
7D21 7F7F69               CLR    INV
7D24 9DA5                 JSR    165
7D26 2709                 BEQ    NOOPN
7D28 BD89AA               JSR    CKCOMA
7D2B BD8E51               JSR    GETNUM
7D2E F77F69               STB    INV
7D31 7F7F6A      NOOPN    CLR    XPOS
7D34 7F7F6B               CLR    YPOS
7D37 BD7E53               JSR    WINOFF
7D3A B67F62               LDA    TEMP
7D3D B77F63               STA    WININU
7D40 39                   RTS
7D41 C607        ERROR    LDB    #7
7D43 7E8344               JMP    33604
7D46             ********************************
7D46 BD8E51      USEWIN   JSR    GETNUM
7D49 C105                 CMPB   #5
7D4B 24F4                 BHS    ERROR
7D4D F77F63               STB    WININU
7D50 BD7E2B               JSR    WINDON
7D53 BD7DFD               JSR    GETADR
7D56 9F88                 STX    136
7D58 39                   RTS
7D59             ********************************
7D59 BD7E2B      CURSOR   JSR    WINDON
7D5C BD7E17               JSR    GETWID
7D5F BD7E21               JSR    GETHGT
7D62 BD8E51               JSR    GETNUM
7D65 F17F60               CMPB   WIDTH
7D68 221A                 BHI    FCERR
7D6A F77F6A               STB    XPOS
7D6D BD89AA               JSR    CKCOMA
7D70 BD8E51               JSR    GETNUM
7D73 F17F5F               CMPB   HEIGHT
7D76 220C                 BHI    FCERR
7D78 F77F6B               STB    YPOS
7D7B BD7DFD               JSR    GETADR
7D7E 9F88                 STX    136
7D80 BD7E53               JSR    WINOFF
7D83 39                   RTS
7D84 C608        FCERR    LDB    #8
7D86 7E8344               JMP    33604
7D89             ********************************
7D89 2719        WINCLS   BEQ    TEXTC
7D8B BD7E2B               JSR    WINDON
7D8E BD8E51               JSR    GETNUM
7D91 C108                 CMPB   #8
7D93 22AC                 BHI    ERROR
7D95 5D                   TSTB
7D96 2604                 BNE    NOBLK
7D98 C680                 LDB    #128
7D9A 200E                 BRA    GOTCL
7D9C 8610        NOBLK    LDA    #16
7D9E 5A                   DECB
7D9F 3D                   MUL
7DA0 CB8F                 ADDB   #143
7DA2 2006                 BRA    GOTCL
7DA4 BD7E2B      TEXTC    JSR    WINDON
7DA7 F67F64               LDB    SPACE
7DAA 7F7F6A      GOTCL    CLR    XPOS
7DAD 7F7F6B               CLR    YPOS
7DB0 BD7DFD               JSR    GETADR
7DB3 9F88                 STX    136
7DB5 BD7E17               JSR    GETWID
7DB8 BD7E21               JSR    GETHGT
7DBB 7C7F60               INC    WIDTH
7DBE 7C7F5F               INC    HEIGHT
7DC1 B67F60      CLSL1    LDA    WIDTH
7DC4 B77F61               STA    TWID
7DC7 4F                   CLRA
7DC8 E786        CLSL2    STB    A,X
```

```
7DCA 4C                   INCA
7DCB 7A7F61               DEC    TWID
7DCE 26F8                 BNE    CLSL2
7DD0 308820               LEAX   32,X
7DD3 7A7F5F               DEC    HEIGHT
7DD6 26E9                 BNE    CLSL1
7DD8 BD7E53               JSR    WINOFF
7DDB 39                   RTS
7DDC             ********************************
7DDC BD7E2B      XPOSF    JSR    WINDON
7DDF F67F6A               LDB    XPOS
7DE2 7E8C36               JMP    35894
7DE5             ********************************
7DE5 BD7E2B      YPOSF    JSR    WINDON
7DE8 F67F6B               LDB    YPOS
7DEB 7E8C36               JMP    35894
7DEE             ********************************
7DEE
7DEE 0D6F        PRTJB    TST    111
7DF0 2701                 BEQ    VDU
7DF2 39                   RTS
7DF3 3262        VDU      LEAS   2,S
7DF5 3436                 PSHS   A,B,X,Y
7DF7 BD7E6F               JSR    SETWIN
7DFA 3536                 PULS   A,B,X,Y
7DFC 39                   RTS
7DFD             ********************************
7DFD
7DFD 3406        GETADR   PSHS   A,B
7DFF B67F67               LDA    Y1
7E02 BB7F6B               ADDA   YPOS
7E05 C620                 LDB    #32
7E07 3D                   MUL
7E08 8E0400               LDX    #1024
7E0B 308B                 LEAX   D,X
7E0D B67F65               LDA    X1
7E10 BB7F6A               ADDA   XPOS
7E13 3086                 LEAX   A,X
7E15 3586                 PULS   A,B,PC
7E17 B67F66      GETWID   LDA    X2
7E1A B07F65               SUBA   X1
7E1D B77F60               STA    WIDTH
7E20 39                   RTS
7E21 B67F68      GETHGT   LDA    Y2
7E24 B07F67               SUBA   Y1
7E27 B77F5F               STA    HEIGHT
7E2A 39                   RTS
7E2B 3436        WINDON   PSHS   A,B,X,Y
7E2D B67F63               LDA    WININU
7E30 C607                 LDB    #7
7E32 3D                   MUL
7E33 8E7F6C               LDX    #WIN1
7E36 3085                 LEAX   B,X
7E38 C607                 LDB    #7
7E3A 108E7F65             LDY    #X1
7E3E A680        COPY     LDA    ,X+
7E40 A7A0                 STA    ,Y+
7E42 5A                   DECB
7E43 26F9                 BNE    COPY
7E45 8620                 LDA    #32
7E47 7D7F69               TST    INV
7E4A 2602                 BNE    INVET
7E4C 8660                 LDA    #96
7E4E B77F64      INVET    STA    SPACE
7E51 35B6                 PULS   A,B,X,Y,PC
7E53
7E53 3436        WINOFF   PSHS   A,B,X,Y
7E55 B67F63               LDA    WININU
7E58 C607                 LDB    #7
7E5A 3D                   MUL
7E5B 8E7F6C               LDX    #WIN1
7E5E 3085                 LEAX   B,X
7E60 C607                 LDB    #7
7E62 108E7F65             LDY    #X1
7E66 A6A0        COPB     LDA    ,Y+
7E68 A780                 STA    ,X+
7E6A 5A                   DECB
7E6B 26F9                 BNE    COPB
7E6D 35B6                 PULS   A,B,X,Y,PC
7E6F
7E6F 8DBA        SETWIN   BSR    WINDON
7E71 BDA93A               JSR    43322
7E74 8D08                 BSR    PRINT
7E76 BD7DFD               JSR    GETADR
7E79 9F88                 STX    136
```

```
7E7B 8DD6              BSR    WINOFF
7E7D 39                RTS
7E7E
7E7E 17FF7C     PRINT  LBSR   GETADR
7E81 8108              CMPA   #8
7E83 2631              BNE    NOTBAK
7E85 B67F6A            LDA    XPOS
7E88 261A              BNE    DECSP
7E8A F67F6B            LDB    YPOS
7E8D 10270087          LBEQ   DONPRT
7E91 B67F64            LDA    SPACE
7E94 A784              STA    ,X
7E96 7A7F6B            DEC    YPOS
7E99 17FF7B            LBSR   GETWID
7E9C B67F60            LDA    WIDTH
7E9F B77F6A            STA    XPOS
7EA2 2008              BRA    DONBAK
7EA4 B67F64     DECSP  LDA    SPACE
7EA7 A784              STA    ,X
7EA9 7A7F6A            DEC    XPOS
7EAC 17FF4E     DONBAK LBSR   GETADR
7EAF B67F64            LDA    SPACE
7EB2 A784              STA    ,X
7EB4 2062              BRA    DONPRT
7EB6 810D       NOTBAK CMPA   #13
7EB8 261C              BNE    NOTLF
7EBA B67F64            LDA    SPACE
7EBD A784              STA    ,X
7EBF 17FF5F            LBSR   GETHGT
7EC2 7F7F6A            CLR    XPOS
7EC5 B67F6B            LDA    YPOS
7EC8 B17F5F            CMPA   HEIGHT
7ECB 2504              BLO    INCYC
7ECD 8D4A              BSR    SCROL
7ECF 2047              BRA    DONPRT
7ED1 7C7F6B     INCYC  INC    YPOS
7ED4 2042              BRA    DONPRT
7ED6 4D         NOTLF  TSTA
7ED7 2B15              BMI    GRAFIC
7ED9 8120              CMPA   #32
7EDB 253B              BLO    DONPRT
7EDD 8160              CMPA   #96
7EDF 2404              BHS    LOWCAS
7EE1 8A40              ORA    #64
7EE3 2002              BRA    OUTCHR
7EE5 8060       LOWCAS SUBA   #96
7EE7 7D7F69     OUTCHR TST    INV
7EEA 2702              BEQ    GRAFIC
7EEC 8840              EORA   #64
7EEE 17FF0C     GRAFIC LBSR   GETADR
7EF1 A784              STA    ,X
7EF3 17FF21            LBSR   GETWID
7EF6 B67F6A            LDA    XPOS
7EF9 B17F60            CMPA   WIDTH
7EFC 2517              BLO    INCHZ
7EFE 7F7F6A            CLR    XPOS
7F01 17FF1D            LBSR   GETHGT
7F04 B67F6B            LDA    YPOS
7F07 B17F5F            CMPA   HEIGHT
7F0A 2504              BLO    INCVT
7F0C 8D0B              BSR    SCROL
7F0E 2008              BRA    DONPRT
7F10 7C7F6B     INCVT  INC    YPOS
7F13 2003              BRA    DONPRT
7F15 7C7F6A     INCHZ  INC    XPOS
7F18 39         DONPRT RTS
7F19
7F19 BD7E17     SCROL  JSR    GETWID
7F1C BD7E21            JSR    GETHGT
7F1F 7C7F60            INC    WIDTH
7F22 B67F67            LDA    Y1
7F25 C620              LDB    #32
7F27 3D                MUL
7F28 8E0400            LDX    #1024
7F2B 308B              LEAX   D,X
7F2D F67F5F            LDB    HEIGHT
7F30 3414       SLP1   PSHS   X,B
7F32 F67F60            LDB    WIDTH
7F35 F77F61            STB    TWID
7F38 F67F65            LDB    X1
7F3B 3185       SLP2   LEAY   B,X
7F3D A6A820            LDA    32,Y
7F40 A7A4              STA    ,Y
7F42 5C                INCB
7F43 7A7F61            DEC    TWID
7F46 26F3              BNE    SLP2
7F48 3514              PULS   X,B
7F4A 308820            LEAX   32,X
7F4D 5A                DECB
7F4E 26E0              BNE    SLP1
7F50 F67F65            LDB    X1
7F53 B67F64            LDA    SPACE
7F56 A785       BLP1   STA    B,X
7F58 5C                INCB
7F59 7A7F60            DEC    WIDTH
7F5C 26F8              BNE    BLP1
7F5E 39                RTS
7F5F            HEIGHT RMB    1
7F60            WIDTH  RMB    1
7F61            TWID   RMB    1
7F62            TEMP   RMB    1
7F63            WININU RMB    1
7F64            SPACE  RMB    1
7F65            X1     RMB    1
7F66            X2     RMB    1
7F67            Y1     RMB    1
7F68            Y2     RMB    1
7F69            INV    RMB    1
7F6A            XPOS   RMB    1
7F6B            YPOS   RMB    1
7F6C
7F6C            *** DATA AREA FOR 5 WINDOWS ***
7F6C
7F6C 001F000F00 WIN1   FCB    0,31,0,15,0,0,0
7F73 001F0D0F00 WIN2   FCB    0,31,13,15,0,0,0
7F7A 001F000C00 WIN3   FCB    0,31,0,12,0,0,0
7F81 001F000F01 WIN4   FCB    0,31,0,15,1,0,0
7F88 011E010E01 WIN5   FCB    1,30,1,14,1,0,0
7F8F            USRLOC RMB    20
7FA3
7FA3
```


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Popular computing Weekly, Dec. 15th
Datapen

Dragon database

Ever wanted to put all your vital information — names, addresses, birthdays — on database?
Lee Noble shows you how.

DRAGBASE is a database designed to operate on the DRAGON 32/64 with Dragon data DOS attached. The program may easily be adapted to operate with cassette storage by changing the load and save routines and removing the error check and disk editor routines.

On running you will be presented with the MAIN MENU. From this menu you can:

[1] Load a file
[2] Construct a file or extend one which is in memory.
[3] View the file which is in memory.
[4] Save the file which is in memory.
[5] Construct the titles to the five different fields which make up one record in the datafile.
[6] Move to the disk editor which allows you to: Look at the disk directory, Initialise a disk, Kill a file or Protect a file.

The loading and saving of files is very easy. On selecting either [1] or [4] you are requested to enter the name of the file you wish to save or load. These names must be no more than eight characters long (you will not be able to enter more than eight characters) and must contain no spaces or punctuation marks. On entering an invalid file name you will be told of your mistake and the program will return to the main menu.

On selecting [2] you are initially asked to indicate whether you wish to extend or construct a file.

Construct file

Each file is split up into 200 records each of which has five fields. Each of the fields is given a name which is defined in [5]. These names all relate to the information stored in the file. For instance:

TITLE 1 Name
TITLE 2 Address
TITLE 3 Telephone number
TITLE 4 Birthday
TITLE 5 Other information

This file is storing information on people. You would enter the Name of the person under name, the address of the same person under Address and so on. Once this record of the file is completed you can go on and enter more records or return to the main menu. In the example above the information on 200 different people may be stored. Each person's record has five separate fields of information stored on them making a total of 200 × 5 = 1,000 separate pieces of data in one file, each of which may be up to 61 characters long.

Extend file

The extend facility allows you to extend a file, as the name suggests. In the above example, if you were to exit and return to

```
10 ERRORGOTO2840
20 REM ******************************************
30 REM *DRAGBASE.  WRITTEN BY LEE NOBLE.  1984.*
40 REM ******************************************
50 POKE65495,0
60 GOSUB3280
70 PCLEAR1
80 CLEAR7000
90 GOSUB2970:REM initialise invert
100 DIMRECORD$(200,5),TITLE$(5)
110 GOSUB130:REM menu one
120 GOTO110
130 REM menu one
140 CLS5
150 FOR X=33 TO449 STEP 32
160 PRINT@X,STRING$(30,32);
170 NEXT X
180 PRINT@101,"[1].........LOAD FILE.";
190 PRINT@165,"[2]..CONSTRUCT/EXTEND.";
200 PRINT@229,"[3].........VIEW FILE.";
210 PRINT@293,"[4].........SAVE FILE.";
220 PRINT@357,"[5]..CONSTRUCT TITLES.";
230 PRINT@421,"[6].......DISK EDITOR.";
240 EXEC&H6100
250 PRINT@11,"DRAG BASE.";
260 PRINT@483,"SELECT APPROPRIATE NUMBER";
270 A$=INKEY$:IF VAL(A$+" ")=0 OR VAL(A$+" ")>6 OR A$="" THEN 270
280 ON VAL(A$) GOSUB 300,640,970,1340,1680,1860
290 RETURN
300 REM load file
310 START=0
320 EXEC&H6100
330 FOR X=33TO449STEP32
340 PRINT@X,STRING$(30,32);
350 NEXTX
360 PRINT@163,"NAME OF FILE TO BE LOADED?";
370 PRINT@299,STRING$(10,207);
380 EXEC&H6100
390 PRINT@480,STRING$(30,32);
400 PLACE=300:MAX=7:GOSUB3050:NAME$=IMF$
410 IF NAME$="" THEN GOTO400
420 FOR X=1 TO8 :A$=MID$(NAME$,X,1):IFA$=" " OR A$="." OR A$="/"
THEN GOTO 400
430 PRINT@480,"  'ENTER'-ABORT   'CLEAR'-LOAD ";
440 A$=INKEY$
450 IF A$=CHR$(13) THEN RETURN
460 IF A$<>CHR$(12) THEN GOTO 440
470 PRINT@480,"           LOADING.          ";:PRINT@448,"";
480 IF EOF(NAME$)=1 THEN CLOSE1:RETURN
490 FREAD NAME$,FROM STAR,FOR 10;NUMBER
500 START=10
510 FOR X=1 TO 5
520 IF EOF(NAME$)=1 THEN CLOSE1:RETURN
530 FLREAD NAME$,FROM START,FOR 30;TITLE$(X)
540 START=START+30
550 NEXTX
560 X=1
570 FOR Y=1 TO 5
580 IF EOF(NAME$)=1 THEN CLOSE1:RETURN
590 FLREAD NAME$,FROM START,FOR 64;RECORD$(X,Y)
600 START=START+64
610 NEXT Y
620 X=X+1
630 GOTO570
640 REM construct files
650 EXEC&H6100:FOR X=33 TO 448 STEP 32
660 PRINT@X,STRING$(30,32);
670 NEXT X
680 PRINT@197,"[1].........CONSTRUCT.";
690 PRINT@261,"[2]............EXTEND.";:EXEC&H6100
700 A$=INKEY$:IF A$="" OR VAL(A$)<1 OR VAL(A$)>2 THEN GOTO 700
710 IF A$="1" THEN NUMBER=1
720 IF A$="2" THEN NUMBER=NUMBER+1
730 F=FRE$
740 PRINT@480,""
750 PRINT@0,"  "+TITLE$(1)+STRING$(30-LEN(TITLE$(1)),32);
760 PRINTSTRING$(64,207);
770 PRINT@96,"  "+TITLE$(2)+STRING$(30-LEN(TITLE$(2)),32);
780 PRINTSTRING$(64,207);
790 PRINT@192,"  "+TITLE$(3)+STRING$(30-LEN(TITLE$(3)),32);
800 PRINTSTRING$(64,207);
810 PRINT@288,"  "+TITLE$(4)+STRING$(30-LEN(TITLE$(4)),32);
820 PRINTSTRING$(64,207);
830 PRINT@384,"  "+TITLE$(5)+STRING$(30-LEN(TITLE$(5)),32);
840 PRINTSTRING$(64,207);
850 PRINT@485,"SPACE AVALIABLE -";F;
860 EXEC&H6100
870 PRINT@448,""
880 PLACE=32:MAX=62:GOSUB3050:RECORD$(NUMBER,1)=IMF$
890 PLACE=128:GOSUB3050:RECORD$(NUMBER,2)=IMF$
900 PLACE=224:GOSUB3050:RECORD$(NUMBER,3)=IMF$
910 PLACE=320:GOSUB3050:RECORD$(NUMBER,4)=IMF$
920 PLACE=416:GOSUB3050:RECORD$(NUMBER,5)=IMF$
930 F=FRE$
940 PRINT@484,"'CLEAR'-NEXT 'ENTER'-END";
950 A$=INKEY$:IF A$=CHR$(13) THEN RETURN:ELSE IF A$=CHR$(12) THEN
NUMBER=NUMBER+1:GOTO740
960 GOTO950
970 REM view file
980 Y=0
990 FOR X=1 TO 5
1000 V=LEN(TITLE$(X))
1010 IF V>Y THEN Y=V
1020 NEXT X
1030 PRINT@0,"           DRAGBASE."
1040 PRINT@480,"   SELECT APPROPRIATE NUMBER ";
1050 Z=(28-Y)/2
1060 EXEC&H6100
1070 FOR X=32TO448STEP32
1080 PRINT@X,STRING$(32,32);
1090 NEXTX
1100 PRINT@72,"CLASSIFICATIONS.";
1110 PRINT@128+Z,"[1]."+TITLE$(1);
1120 PRINT@192+Z,"[2]."+TITLE$(2);
1130 PRINT@256+Z,"[3]."+TITLE$(3);
1140 PRINT@320+Z,"[4]."+TITLE$(4);
1150 PRINT@384+Z,"[5]."+TITLE$(5);
1160 PRINT@448+Z,"[6].END"
1170 EXEC&H6100
1180 A$=INKEY$:IF A$="" OR VAL(A$)<1 OR VAL(A$)>6 THEN 1180 ELSE
CN=VAL(A$)
1190 IF CN=6 THEN RETURN
1200 PRINT@128,STRING$(32,32);
1210 PRINT@128+(32-(LEN(TITLE$(VAL(A$)))))/2,TITLE$(VAL(A$));
1220 PRINT@192,STRING$(32,32);
1230 PRINT@196,"ENTER ITEM TO SEARCH FOR";
1240 FOR E=256 TO 384 STEP 32
1250 PRINT@E,STRING$(32,32);
1260 NEXT E
```

the main menu in the middle of entering information you could then save the data you have entered and return to it at a later stage to continue entering information.

View file

There would be no point in entering a load of information if you couldn't get access to it again. The VIEW facility allows you to look at the information you have stored. But that's not all. Once again we will take the name, address, telephone number example we used before.

You must first select which field you wish to search through — the choices are:

1 Name
2 Address
3 Telephone number
4 Birthday
5 Other information

Let's say we select Name. Now we have to enter the search item. As this is in the name field we should enter a name. The program will now search through all the name fields in all the records until it finds the name you entered. On finding the search item, it, along with the rest of the information on that person, will be displayed on screen (Name, Address, Telephone number, Birthday, Other information).

If the search item occurs more than once (if, say, two or more people share the same name) then the records on both or all people with that name that are contained in the file will be displayed. When no more people with the search item as a name are found the total number of finds will be displayed and the program will return to the view menu. The information displayed may also be printed out (if a printer is connected) or edited.

Editor

If you select editor mode a black flashing cursor will appear to the top left of the screen. This cursor can be moved up and down with the cursor keys ↑ and ↓. If the 'ENTER' key is pressed while this cursor is flashing then the editor mode will be exited. If any other key is pressed then the information in the field that the cursor is pointing at will be cleared and the substitute information for that field may be entered. On pressing 'ENTER' again the editing of the present field will be terminated and the black flashing cursor will appear at the top left of the screen once more. You can now edit another field or exit the edit mode (press 'ENTER'). When you exit the edit mode the view mode will carry on.

Construct titles

With this facility you are able to give each of the five fields a name. In the above example field 1 is given the name 'NAME', field 2 is called 'ADDRESS' and so on for fields 3, 4 and 5. The field name is also the title which is displayed on screen. Being able to change the field names allows the database to be used for all sorts of things from names and addresses to cataloguing books or a record collection.

Disk editor

The disk editor makes life using the disk drive a lot easier. It allows you, for example, to initialise a disk or kill a file without having to exit the program to use the basic commands.

Program notes

050	Speed up poke
110-290	Main menu
300-630	Load file
640-960	Construct files
970-1330	View files
1340-1670	Save file
1680-1850	Title construction
1860-2740	Disk editor
1870-2080	Display disk directory
2090-2160	Initialise disk
2170-2290	Kill file
2300-2470	File Protection on/off
2480-2780	Search routine
2790-2830	Wait for space bar to be pressed
2840-2960	Display error messages
2970-3040	Initialise machine code screen invert
3050-3140	Input routine
3150-3270	Print out information
3280-3340	Break key disable
3350-3530	Edit routine

```
1270 PRINT@448,""
1280 PRINT@480,STRING$(30,32);
1290 PLACE=288:MAX=62:GOSUB3050:TA$=IMF$
1300 PRINT@192,""
1310 PRINT@491,"SEARCHING.";
1320 GOSUB2480:REM search routine
1330 GOTO970
1340 REM save file
1350 LEGHT=(64*NUMBER)+(30*5)
1360 START=0
1370 EXEC&H6100
1380 FOR X=33TO449STEP32
1390 PRINT@X,STRING$(30,32);
1400 NEXTX
1410 PRINT@163,"NAME OF FILE TO BE SAVED ?";
1420 PRINT@299,STRING$(10,207);
1430 EXEC&H6100
1440 PRINT@480,STRING$(30,32);
1450 PLACE=300:MAX=7:GOSUB3050:NAME$=IMF$
1460 IF NAME$="" THEN GOTO1450
1470 FOR X=1 TO8 :A$=MID$(NAME$,X,1):IFA$=" " OR A$="." OR A$="/"
THEN GOTO 1450
1480 PRINT@480,"  'ENTER'-ABORT   'CLEAR'-SAVE ";
1490 A$=INKEY$
1500 IF A$=CHR$(13) THEN RETURN
1510 IF A$<>CHR$(12) THEN GOTO1490
1520 PRINT@480,"             SAVEING.          ";:PRINT@448,"";
1530 CREATE(NAME$),LEGTH
1540 FWRITE NAME$,FROM START,FOR 10;NUMBER
1550 START=10
1560 FOR X=1 TO 5
1570 FWRITE NAME$,FROM START,FOR 30;TITLE$(X)
1580 START=START+30
1590 NEXTX
1600 FOR X=1 TO NUMBER
1610 FOR Y=1 TO 5
1620 FWRITE NAME$,FROM START,FOR 64;RECORD$(X,Y)
1630 START=START+64
1640 NEXTY,X
1650 CLOSE1
1660 PROTECT ON NAME$+".DAT"
1670 RETURN
1680 REM title construction
1690 PRINT@71,"title";:PRINT@77,"construction";
1700 PRINT@97,STRING$(30,32);
1710 FOR X=160 TO 416 STEP64
1720 PRINT@X,STRING$(32,32);
1730 NEXTX
1740 PRINT@480,STRING$(30,32);
1750 PRINT@129,"title";:PRINT@135,"one";
1760 PRINT@193,"title";:PRINT@199,"two";
1770 PRINT@257,"title";:PRINT@263,"three";
1780 PRINT@321,"title";:PRINT@327,"four";
1790 PRINT@385,"title";:PRINT@391,"five";
1800 PLACE=162:MAX=27:GOSUB3050:TITLE$(1)=IMF$
1810 PLACE=226:GOSUB3050:TITLE$(2)=IMF$
1820 PLACE=290:GOSUB3050:TITLE$(3)=IMF$
1830 PLACE=354:GOSUB3050:TITLE$(4)=IMF$
1840 PLACE=418:GOSUB3050:TITLE$(5)=IMF$
1850 RETURN
1860 REM disk editor
1870 CLS5
1880 FOR X=33 TO449 STEP 32
1890 PRINT@X,STRING$(30,32);
1900 NEXT X
1910 PRINT@69,"[1].....DISK DIRETORY";
1920 PRINT@133,"[2]...INITIALISE DISK";
1930 PRINT@197,"[3].........KILL FILE";
1940 PRINT@261,"[4]...FILE PROTECTION";
1950 PRINT@325,"[5]...............END";
1960 EXEC&H6100
1970 PRINT@11,"DRAG BASE.";
1980 PRINT@483,"SELECT APPROPRIATE NUMBER";
1990 A$=INKEY$:IF VAL(A$+" ")=0 OR VAL(A$+" ")>5 OR A$="" THEN
1990
2000 IF A$="5" THEN RETURN
2010 PRINT@448,"";
2020 ON VAL(A$) GOSUB 2040,2090,2170,2300
2030 GOTO1860
2040 CLS
2050 PRINT@480,"";
2060 DIR
2070 GOSUB2800
2080 RETURN
2090 REM initialise disk
2100 PRINT@133,"[2]...INITIALISE DISK";
2110 A$=INKEY$:IF A$="" THEN 2110
2120 IF A$<>"2" THEN RETURN
2130 PRINT@480,"       INITIALISING DISK.      ";
2140 PRINT@448,"";
2150 DSKINIT
2160 RETURN
2170 REM kill
2180 PRINT@384,"ENTER NAME OF FILE TO BE KILLED.";
2190 PRINT@480,STRING$(31,32);
2200 PRINT@425,STRING$(14,32);
2210 PLACE=426:MAX=11:GOSUB3050:NAME$=IMF$
2220 PRINT@480," 'ENTER'-ABORT 'CLEAR'-PROCEED";
2230 A$=INKEY$
2240 IF A$=CHR$(13) THEN RETURN
2250 IF A$<>CHR$(12) THEN GOTO 2230
2260 PRINT@480,"            KILLING.          ";
2270 PRINT@448,"";
2280 KILL NAME$
2290 RETURN
2300 REM protection
2310 EXEC&H6100:FOR X=33 TO 449 STEP 32
2320 PRINT@X,STRING$(30,32);
2330 NEXT X
2340 PRINT@133,"[1].......PROTECT ON.";
2350 PRINT@197,"[2].......PROTECT OFF.";:EXEC&H6100
2360 GA$=INKEY$:IF GA$="" OR VAL(GA$)<1 OR VAL(GA$)>2 THEN GOTO
2360
2370 EXEC&H6100:PRINT@293,"  ENTER NAME OF FILE
";:EXEC&H6100:PRINT@480,STRING$(31,32);
2380 PRINT@393,STRING$(14,32);
2390 PLACE=394:MAX=11:GOSUB3050:NAME$=IMF$
2400 PRINT@480," 'ENTER'-ABORT 'CLEAR'-PROCEED";
2410 A$=INKEY$
2420 IF A$=CHR$(13) THEN RETURN
2430 IF A$<>CHR$(12) THEN GOTO2410
2440 PRINT@480,STRING$(31,32);:PRINT@448,"";
2450 IF GA$="2" THEN PROTECT OFF NAME$
2460 IF GA$="1" THEN PROTECT ON NAME$
2470 RETURN
```

```
2480 REM search routine
2490 TF=0
2500 FOR R=1 TO NUMBER
2510 IF INSTR(1,RECORD$(R,CN),TA$)>0 THEN TF=TF+1:GOSUB2560
2520 NEXT
2530 PRINT@448,"       NUMBER OF
FINDS=";TF;:PRINT@480,STRING$(30,32);:BEEP1
2540 GOSUB2790
2550 RETURN
2560 EXEC&H6100
2570 PRINT@0,"  "+TITLE$(1)+STRING$(30-LEN(TITLE$(1)),32);
2580 PRINTSTRING$(64,207);
2590 PRINT@96,"  "+TITLE$(2)+STRING$(30-LEN(TITLE$(2)),32);
2600 PRINTSTRING$(64,207);
2610 PRINT@192,"  "+TITLE$(3)+STRING$(30-LEN(TITLE$(3)),32);
2620 PRINTSTRING$(64,207);
2630 PRINT@288,"  "+TITLE$(4)+STRING$(30-LEN(TITLE$(4)),32);
2640 PRINTSTRING$(64,207);
2650 PRINT@384,"  "+TITLE$(5)+STRING$(30-LEN(TITLE$(5)),32);
2660 PRINT@416,STRING$(64,207);
2670 EXEC&H6100
2680 PRINT@32,RECORD$(R,1);
2690 PRINT@128,RECORD$(R,2);
2700 PRINT@224,RECORD$(R,3);
2710 PRINT@320,RECORD$(R,4);
2720 PRINT@416,RECORD$(R,5);
2730 PRINT@480,"'SPACE'-NEXT/'E'-EDIT/'P'-PRINT";:POKE1535,110
2740 A$=INKEY$:IF A$="" THEN GOTO 2740
2750 IF A$=" " THEN RETURN
2760 IF A$="E" THEN GOSUB3350:RETURN
2770 IF A$="P" THEN GOSUB 3150:RETURN
2780 GOTO 2740
2790 REM
2800 PRINT@480,"  PRESS SPACE BAR TO CONTINUE. ";:POKE1535,96
2810 A$=INKEY$
2820 IF A$<>CHR$(32) THEN GOTO2810
2830 RETURN
2840 REM error messages
2850 IF ERR=160 THEN PRINT@480,"      FILE DOES NOT EXSIST     ";
2860 IF ERR=152 THEN PRINT@480," FILE EXSISTS AND IS PROTECTED.";
2870 IF ERR=148 THEN PRINT@480," THIS DISK IS FULL. USE ANOTHER";
2880 IF ERR=138 THEN PRINT@448,"FAULTY DISK. TRY
REINITIALISING       OR USE ANOTHER DISK.    ";
2890 IF ERR=128 THEN PRINT@448," SYSTEM NOT READY. FAULTY DISK?
DISK NOT INSERTED? DOOR OPEN?";
2900 IF ERR=144 THEN PRINT@480," INVALID DIRECTORY. FAULTY DISK";
2910 IF ERR=146 THEN PRINT@480,"       DIRECTORY IS FULL.      ";
2920 IF ERR=44 THEN PRINT@448," WRONG FILL MODE. FILE DOES NOT
CONTAIN DESIRED INFORMATION  ";
2930 IF ERR=12 OR ERR=26 THEN PRINT@480," OUT OF MEMORY OR STRING
SPACE.";
2940 BEEP1
2950 WAIT 5000
2960 GOTO110
2970 REM screen invert
2980 FOR X=&H6100 TO &H610E
2990 READ A$
3000 POKE X,VAL("&H"+A$)
3010 NEXT X
3020 REM EXEC&H6100
3030 DATA8E,04,00,A6,84,88,40,A7,80,8C,06,00,25,F5,39
3040 RETURN
3050 REM input routine
3060 IN$="":IMF$=""
3070 IN$=INKEY$:PRINT@PLACE,">";:PRINT@PLACE," ";:IF IN$="" OR
IN$=CHR$(12)  THEN 3070
3080 IF ASC(IN$)=8 AND LEN(IMF$)>1 THEN
IMF$=LEFT$(IMF$,LEN(IMF$)-1):PLACE=PLACE-1:PRINT@PLACE," ";:GOTO3100
3090 IF ASC(IN$)=8 AND LEN(IMF$)=1 THEN
IMF$="":PLACE=PLACE-1:PRINT@PLACE," ";
3100 IF PLACE<=P1 THEN PLACE=P1
3110 IF ASC(IN$)<>8 AND ASC(IN$)<>13 AND LEN(IMF$)<=MAX THEN
IMF$=IMF$+IN$:PRINT@PLACE,IN$;:PLACE=PLACE+1
3120 IF PLACE<=P1 THEN PLACE=P1
3130 IF ASC(IN$+" ")<>13 THEN GOTO 3070
3140 RETURN
3150 REM Print out
3160 PRINT@480,"         HEADINGS (Y/N)        ";:POKE1535,96
3170 A$=INKEY$:IF A$="N" OR A$="Y" THEN 3190
3180 GOTO 3170
3190 PRINT@480,"       SENDING TO PRINTER      ";:POKE1535,96
3200 FOR LOOP=1 TO 5
3210 IF A$="Y" THEN PRINT#-2,CHR$(8) + CHR$(28) + CHR$(255) +
CHR$(136) + CHR$(28) + CHR$(225) + CHR$(136) + CHR$(15)
3220 IF A$="Y" THEN PRINT#-2,CHR$(14)+TITLE$(LOOP)+CHR$(15)
3230 PRINT#-2,RECORD$(R,LOOP)
3240 NEXT LOOP
3250 IF A$="Y" THEN PRINT#-2,CHR$(8) + CHR$(28) + CHR$(255) +
CHR$(136) + CHR$(28) + CHR$(225) + CHR$(136) + CHR$(15)
3260 PRINT#-2,CHR$(13)
3270 RETURN
3280 POKE411,228
3290 POKE412,203
3300 POKE413,4
3310 POKE414,237
3320 POKE415,228
3330 POKE410,236
3340 RETURN
3350 REM edit
3360 PRINT@480,"   'ENTER' TO EXIT EDIT MODE.  ";
3370 POKE1535,96
3380 PS=1056:QT=1
3390 C1=PEEK(PS):C2=PEEK(PS+32)
3400 WAIT400
3410 POKEPS,62:POKEPS+32,62
3420 WAIT500
3430 POKEPS,C1:POKEPS+32,C2
3440 IF PEEK(341)=223 AND PS>1056 THEN PS=PS-96:QT=QT-1:GOTO3390
3450 IF PEEK(342)=223 AND PS<1440 THEN PS=PS+96:QT=QT+1:GOTO3390
3460 A$=INKEY$
3470 IF A$="" OR A$=CHR$(94) OR A$=CHR$(10) THEN 3390
3480 IF A$=CHR$(13) THEN RETURN
3490 RECORD$(R,QT)=IMF$
3500 PRINT@PS-1024,STRING$(54,32)
3510 PLACE=PS-1024:MAX=63:GOSUB3050
3520 RECORD$(R,QT)=IMF$
3530 GOTO3380
```

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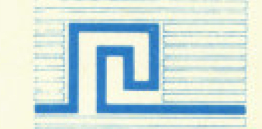
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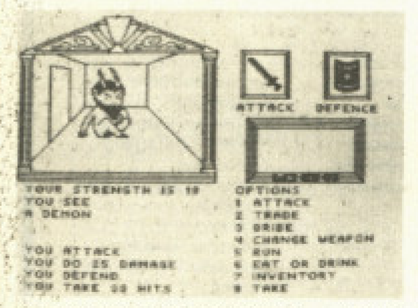




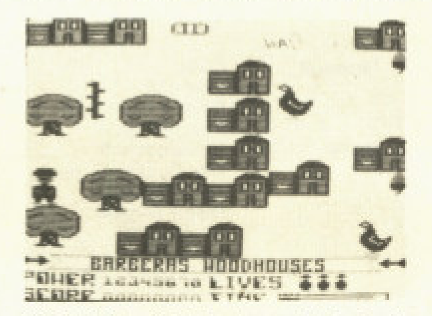
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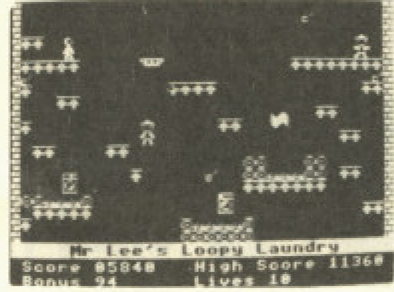
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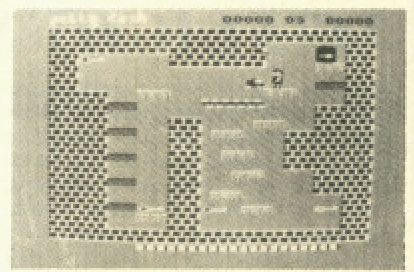
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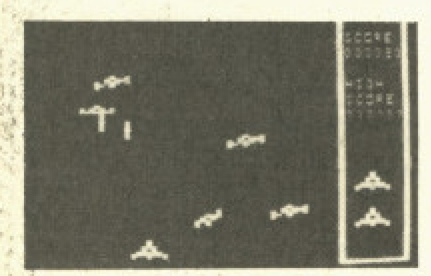
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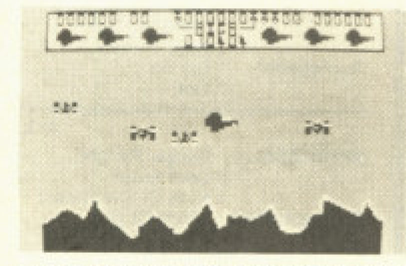
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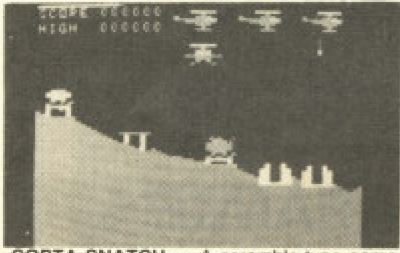
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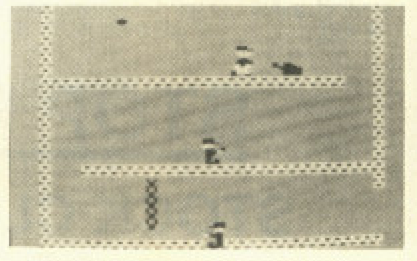
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Manic-Miner cheats the official version

***Roy Coates** gives the authorised cheat method*

WHEN *Manic-Miner* was written it was envisaged that many people would give up trying to complete the game owing to some of the more difficult screens such as the warehouse. Because of this a cheat routine was written into the game which may be accessed as follows.

1 — Set the game running on the Central Cavern.
2 — Press the 'P' key to Pause the game.
3 — Very quickly press the 'P' key again; this will re-start the game and will be taken as the first letter of the password which is 'PENGUIN'.
4 — Now enter the rest of the password 'ENGUIN'. If you have been successful a boot will appear at the bottom right hand corner of the screen.
5 — At any time whilst you are playing the game you may access the cheat. All you have to do is press the 'BREAK', key. The game will freeze. Now press a key in the range A to V to select your screen.

Please note that there is only one version of *Manic-Miner* and so this cheat will work on any valid copy of the game. For those of you who wish to make a permanent copy of the game with the cheat enabled and with unlimited lives read on.

Switch your Dragon OFF and then ON again ensuring that any cartridges are removed. Type in the BASIC program given below, carefully checking that the DATA statements are entered correctly. RUN the program and when prompted to press the ENTER key place a blank tape in your cassette player, press the ENTER key and the machine code routine held in the DATA statements will be saved to tape.

Again switch your Dragon OFF and then ON again, place your *Manic-Miner* tape in the cassette recorder and load the game with the command:

CLOADM"",2000

When this has loaded type in the following POKES.

POKE &H3B83,&HC0
POKE &H5146,&H0A
POKE &H46EF,&H20

These POKES will enable the cheat routine and give unlimited lives. CLOADM the program that was saved from above, place a black tape in your cassette recorder and when ready to record type

EXEC &H600

A new version of *Manic-Miner* will now be saved to tape and may be loaded in the same way as the original.

Finally, my thanks to all the people who have written to me regarding *Manic-Miner* and *JetSet Willy,* your letters are very much appreciated.

```
10 FOR A = &H600 TO &H632 : READ B$ : POKE A,VAL("&H"+B$)
20 NEXT A
30 INPUT "Press ENTER when ready to save...";A
40 CSAVEM "SAVE",&H600,&H632,&H600
50 DATA 8E,06,2A,10,8E,01,D2,A6,80,27,04,A7,A0,20,F8,8E,01
60 DATA 50,BF,01,E7,8E,09,20,34,10,8E,7D,AF,34,10,8E,00,00
70 DATA BF,01,E5,34,10,7E,99,1B,4D,49,4E,45,52,32,20,20,00
```

Address specific loading

*Another **Roy Coates** routine — how to put machine code programs just where you want them*

THE ABILITY of the Dragon to load machine code programs into memory at an address specified by the user is obviously a very useful one. Unfortunately, saving a portion of the Dragon's memory so that it appears on the tape as having a different load address has always been a bit of a problem. The machine code routine given here does just that. The routine given is relocatable so that those using it without an assembler may choose any memory location as the origin for poking in the Opcodes here. This makes the listing very useful indeed.

The example shown hee saves memory from $2000 to $3000 to tape but changes the tape descriptor block so that when re-loaded the code will load at $1000 with an EXEC address of $1100 where 'tstart' and 'exec' are the start and exec addresses you wish the final tape copy to have, and 'mstart' and 'mend are the start and end addresses of the actual code in memory. replace 'FILENAME' with the name for your particular program.

```
0600                             ORG    $600
0600 30     8D 0027              LEAX   NAME,PCR
0604 10BE   01D2                 LDY    #$01D2
060B A6     B0         NLOOP     LDA    ,X+
060A 27     04                   BEQ    ADDRS
060C A7     A0                   STA    ,Y+
060E 20     FB                   BRA    NLOOP
0610 BE     1000       ADDRS     LDX    #$1000      ;'tstart'
0613 BF     01E7                 STX    $01E7
0616 BE     2000                 LDX    #$2000      ;'mstart'
0619 34     10                   PSHS   X
061B BE     3000                 LDX    #$3000      ;'mend'
061E 34     10                   PSHS   X
0620 BE     1100                 LDX    #$1100      ;'exec'
0623 BF     01E5                 STX    $01E5
0626 34     10                   PSHS   X
062B 7E     991B                 JMP    $991B
062B 46 49   4C 45     NAME      FCC    /FILENAME/,0 ;Name for tape.
062F 4E 41   4D 45
0633 00
```

Greater than— or less than?

***Rob Lee** provides some educational interest for Dragon users with children*

UNDERSTANDING THE ideas of 'greater than' and 'less than' may come as second nature to Dragon users, but to children it is a concept which has to be learnt. In school, the idea is often introduced by small group discussion of more than, bigger than, thinner than, poorer than, etc, and then switching to using 'greater than' in number conversations. Formal exercises of this sort often end the day:

6+4 □ 2×6
19−3 □ 4+10

Using the computer, however, gives us the opportunity to penetrate further into children's thinking, for we can create the situation:

□ + □ > □ + □

and ask children to feed numbers into the boxes and test the validity of the resultant statement.

The following program is both a family game and a teacher. The numbers to be put into the boxes are randomly generated and the players decide which box to put them in.

Numbers chosen by the die stay blinking on the screen for a time proportional to the degree of difficulty chosen. Hence younger children can influence the number they get (by being quick on the spacebar), while those choosing harder options cannot. The type of statement (one of eight) you have to satisfy also alters with this choice. Obviously:

A + B > C−D

is easier than:

A + B < C−D

The points awarded to players who succeed in making the statement true vary with the play. In the easier statement, a winner would get the value in box C. In the second case, box A. So, some degree of tactics can help you and additional motivation is added by this variability.

The game is thereby made fun and has a 'come again' factor. It is not just a 'test' or 'quiz' however. If, at the end of a player's turn, the statement is false and he cannot see why, then a moving screen display does the appropriate substitutions to demonstrate the error.

Program Notes:

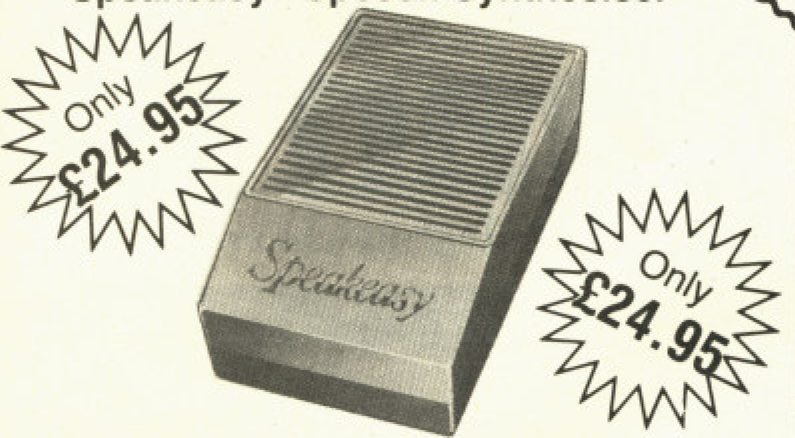
124-136 Title sequence
10-24 Input routine
28-43 Set up screen
60-94 Die rolling & Test sequence
144-146 Inkey subroutine (clears buffer)
148-162 Instructions & data lines ■

```
2 CLEAR 1000
4 BO$=" BOX A   BOX B   BOX C   BOX D "
6 B$(1)=CHR$(129)+STRING$(3,131)+CHR$(13
0):B$(2)=CHR$(133)+" ? "+CHR$(138):B$(3)
=CHR$(132)+STRING$(3,140)+CHR$(136)
8 FOR X=1 TO 3:B$(X)=" "+B$(X)+" ":B$(X)
=B$(X)+" "+B$(X):B$(X)=B$(X)+"  "+B$(X):
B$=B$+B$(X):NEXT:GOSUB 124
10 CLS:PRINT@200,"HOW MANY TO PLAY";:INP
UT NU$:NU=VAL(NU$):IF NU=0 GOTO 10
12 IF NU>6 THENPRINT@194,"MAX. NUMBER OF
 PLAYERS IS 6":T=1111:GOSUB142:GOTO10
14 FOR X=1 TO NUMBER:PRINT:PRINT "NAME O
F PLAYER";X;:INPUTN$(X):IF LEN(N$(X))>10
 THEN N$(X)=LEFT$(N$(X),10)
15 N(X)=0
16 NEXT
18 CLS:PRINT@104,"HOW HARD DO YOU WANT":
PRINT@170,"THE GAME TO BE ?"
20 PRINT@265,"LEVEL  1  (EASIEST)":PRIN
T@329,"LEVEL  2":PRINT@393,"LEVEL  3":PR
INT@457,"LEVEL  4  (HARDEST)"
22 GOSUB 144:EASY=VAL(K$):IF EASY>4 OR E
ASY<1 THEN GOTO 18
24 CLS:PRINT@192,"HOW MANY ROUNDS OF COM
PETITION ?":PRINT@334,"";:GOSUB 144:CHOI
CE=VAL(K$):IF CH<1 THEN GOTO 24
26 GOTO44
28 CLS:PRINT@23,"ROUND";ROUND
30 X$="YOUR TURN "+N$:PRINT@48-LEN(X$)/2
,X$
32 PRINT@99,"MAKE  THIS  STATEMENT  TRUE
      ":PRINTBOX$;B$;" "
34 LA=PL-1:IF LA<1 THEN LA=NU
36 IFOP=2 THEN S1$="-"ELSE S1$="+"
38 IF OS=2 THEN S2$="-"ELSE S2$="+"
40 PRINT@281,S1$;:PRINT@248,S2$;
42 PRINT@239,CA$;:PRINT@456,"RUNNING  TO
TALS":PRINT@481,N$(PL);N(PL);:IF NU>1 TH
EN PRINT@505-LEN(N$(LA)),N$(LA);N(LA);
43 RETURN
44 FOR ROUNDS=1 TO CHOICE:FOR PL=1 TO NU
```



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```
MBER:N$=N$(PL):A=0:B=0:C=0:D=0:TEST=0
46 CASE=CASE+1:IF CASE/2=INT(CASE/2) THE
N SIGN=2 ELSE SIGN=1
48 IF SIGN=1 THEN CA$=" >":CH$="GREATER"
ELSE CA$="< ":CH$="  LESS "
50 IF CASE=1 OR CASE=3 OR CASE=4 OR CASE
=8 THEN OP=1ELSE OP=2
52 IF CASE=2 OR CASE=3 OR CASE=4 OR CASE
=7 THEN OS=1 ELSE OS=2
54 GOSUB 28:FOR TURN=1 TO 4:X$="HIT ANY
KEY TO START DIE ROLLING ":P=320:GOSUB 1
64:PRINT@384,"":GOSUB 144
56 X$=" DIE ROLLING  1 2 3 4 5 6 7 8 9 "
:GOSUB 164
58 X$=" HIT ANY KEY TO STOP DIE  ":P=384
:GOSUB 164
60 DIE=RND(9):B1=48+DIE:L=1356+2*DIE:FOR
 X=1 TO (5-EASY):POKEL,B1:POKEL+32,94
62 GOSUB 140
64 IFMM=1THEN MM=0: GOTO 72
66 K$=INKEY$:IF K$<>""THEN MM=1
68 POKEL,B1+64:POKEL+32,96:NEXT X
70 GOTO 60
72 PRINT@384," IN WHICH BOX SHALL I PUT"
;DIE;"?";
74 GOSUB 144:PRINTK$
76 ON INSTR(1,"ABCD",K$)GOTO 80,82,84,86
78 PRINT@384,"YOU MUST CHOOSE A B C OR D
 ":T=1000:GOSUB 142:GOTO 72
80 IF A=0 THEN A=DIE:PRINT@226,A;:NEXT T
URN ELSE S=A:GOTO 166
82 IF B=0 THEN B=DIE:PRINT@234,B;:NEXT T
URN ELSE S=B:GOTO 166
84 IF C=0 THEN C=DIE:PRINT@243,C;:NEXT T
URN ELSE S=C:GOTO166
86 IF D=0 THEN D=DIE:PRINT@251,D;:NEXT T
URN ELSE S=D:GOTO166
88 IF OP=2 THEN V1=A-B ELSE V1=A+B
90 IF OS=2 THEN V2=C-D ELSE V2=C+D
92 IF S1 =1 AND V1-V2>0 THEN TEST=1:P=30
8:W=C
94 IF S1=2 AND V1-V2<0 THEN TEST=1:P=291
:W=A
96 IF TEST=1 THEN PRINT@P,CHR$(94):PRINT
"YOU HAVE WON ";W;"POINTS  <ENTER>     "
:PRINT@384,"":GOSUB 144
98 IF TEST=1 THEN N(PL)=N(PL)+W:NEXT PL:
GOSUB 112:NEXT ROUND:GOTO116
100 PRINT@320," HARD LUCK IT DID NOT WOR
K OUT   ":PRINT@384,"":X$="CAN YOU SEE W
HY ? "+N$(PL):PRINT@399-LEN(X$)/2,X$
102 GOSUB 144
104 IF K$="Y"OR K$="y"THEN PRINT@320,"":
NEXT PL:GOSUB 112:NEXT ROUND:GOTO116
106 PRINT@320," YOU WERE TO MAKE BOX A "
;S1$;" BOX B":PRINTCH$;" THAN BOX C ";S
2$;" BOX D":PRINT"":FOR X=1 TO 9:T=800:G
OSUB 142:PRINT@395,LEFT$("w a t c h",X);
:GOSUB 140:NEXT
108 P=338:P1=A:GOSUB122:P=346:P1=B:GOSUB
 122:P=365:P1=C:GOSUB  122:P=373:P1=D:GO
SUB 122
110 PRINT@385,V1;" IS  NOT ";CH$;" THAN
";V2:T=2000:GOSUB 144:NEXT PL:GOSUB 112:
NEXT ROUND:GOTO 116
112 CLS:PRINT@136,"after";RO;"rounds";:P
RINT:FOR X=1 TO NU:PRINT:PRINT"    ";N$(
X),N(X):NEXT
114 PRINT:PRINT:PRINT"  hit any key";:GO
SUB 144:RETURN
116 PRINTSTRING$(12,8);"ANOTHER GAME ?"
118 GOSUB 144:IF K$="Y" THEN GOTO 10
120 END
122 PRINT@P,"  ";P1;:GOSUB142:GOSUB140:R
ETURN
124 CLS:T=189
126 S1=192:S2=202:S3=1:S$=" DRAGON USER"
:GOSUB138
128 S1=248:S2=236:S3=-1:S$="PRESENTS ":G
OSUB 138
130 S1=288:S2=296:S3=1:S$=" IT'S IN THE
BOX":GOSUB138
132 S1=478:S2=486:S3=1:IF GG<2 THEN GG=G
G+1:S$=" WRITTEN BY MIKE HARRISON":GOSUB
 138:GOSUB 142:GOTO 124ELSE S$=" DO YOU
WANT INSTRUCTIONS?":S2=485:GOSUB138:GOSU
B 144
134 IF K$="Y" OR K$="y" THEN GOSUB 148
136 RETURN
138 FOR S=S1 TO S2 STEP S3:PRINT@S,S$;:G
OSUB 140:NEXT:RETURN
140 PLAY"V1T25505A03A":RETURN
142 FOR DE=1 TO T:NEXT DE:RETURN
144 K$=INKEY$:IF K$<>""THEN144
146 K$=INKEY$:IF K$=""THEN 146ELSE RETUR
N
148 CLS:FOR P=62 TO 510 STEP 64:GOSUB 15
0:NEXT P:GOSUB 144:GOTO 152
150 READ X$:FOR X=1 TO 29:PRINT@P-X,LEFT
$(X$,X);:PLAY"O1L100CC":NEXT X:RETURN
152 P=510:FOR XX=1 TO 8:PRINT:PRINT:GOSU
B 150:NEXT XX:GOSUB 144
154 PRINT:PRINT:PRINT:PRINTBOX$;B$:GOSUB
 144
156 PRINT:PRINT" SO YOU SHOULD TRY TO  M
AKE THE  SCORING BOX AS  LARGE  AS  YOU
 DARE":PRINT:PRINT" HIT 'R' TO SEE THE R
ULES AGAIN  ANY OTHER KEY TO START PLAYI
NG"
158 GOSUB 144:IFK$="R" THEN RESTORE : GO
TO 148 ELSE RETURN
160 DATA IT'S IN THE BOX IS A THINKING,G
AME. IT  WILL  HELP  YOU  TO,UNDERSTAND
ABOUT INEQUALITIES.,ANY NUMBER OF PEOPLE
 CAN PLAY,UP TO A MAXIMUM OF 6. YOU CAN,
CHOOSE  ONE OF  4  LEVELS  OF ,DIFFICULT
Y  AND ANY NUMBER OF,ROUNDS. hit key for
 new pages
162 DATA BY PUTTING  NUMBERS THROWN BY,A
 DIE INTO EACH OF FOUR BOXES,YOU  MUST
TRY  TO  MAKE  THE,STATEMENT TRUE. ,IF T
HE TASK IS 'GREATER THAN' ,AND YOU WIN
-  YOU SCORE THE ,VALUE IN BOX C. IF YOU
 WIN AT,'LESS THAN' YOU SCORE BOX A.
164 FOR X=1 TO 33:PRINT@P,RIGHT$(X$,X):N
EXT:RETURN
166 IF TURN>4 THEN GOTO88ELSE PRINT@385,
"BOX ";K$;" ALREADY HAS";S;"IN IT":T=100
0:GOSUB 142:GOTO72
```



THREE FOR the price of one, this month, with the arrival of *The Ket Trilogy* from Incentive at the reasonable price of £9.95. This made its debut at the second 6809 Show, and some of you may have seen it there, and perhaps even bought it. For those who couldn't make the show, though, it's worth a fairly lengthy look. While at the show, incidentally, I was told by Microdeal that they have three Dragon adventures in the pipeline, so good luck to them and others who continue to be adventurous, while some drop out of the market.

Three for one

Back to *Ket,* which comes on just one cassette, the first side containing *Mountains of Ket* and *Temple of Vran,* side two having *The Final Mission.* The adventures can all be played independently, so you can be working on all three at once, with success at each one revealing a part of a message for you. Throughout all the three you'll be accompanied by Edgar, a magic assassin bug who has been placed on your neck with orders to sink his poisoned fangs into you if you try to chicken out along the way. Fortunately this doesn't extend to the SAVE routine. Aside from Edgar, what the adventures have in common is that they are all three text-only, accepting most of the usual commands, generally in two-word form.

Each of the adventures also incorporates combat sequences, and while I don't normally care for this kind of intrusion, involving as it does an element of luck, at least here the sequences are brief and quite humorously done. You'll find you can fight all manner of creatures, humans and semi-humans: elephants, horses, warts. If they're in there, you can probably fight them, though it's frequently not a wise move.

The reason you have a creature called Edgar perched near your jugular vein is that you were recently sentenced to death for murder — though this was naturally a frame-up, you being an honest and intrepid adventurer. On the eve of your planned execution you were given a Do-or-Die option, and naturally you chose to Do, presumably on the grounds that an adventure where you choose to Die at the start would have limited appeal. Although you've been temporarily spared, no one's taking any chances, hence you have Edgar hovering at your throat.

The deed you have to do is try to bring peace to the lands of Ket, which are threatened by a group of mad monks living beyond the Mountains of Ket to the east of the village where you begin. A character called Vran is the leader of the monks, aided by the High Priestess, Delphia. Your overall task is to sort the two of them out, naughty people that they are.



THREE GIANT ADVENTURE PROGRAMS COMBINE TO CREATE THE COLOSSAL **KET TRILOGY**

Mountains of Ket simply requires you to get to the far side of the Mountain alive, and as soon as I'd loaded this up the first thing I did was QUIT. This wasn't sheer cowardice, but sheer common sense. When you begin you're randomly allocated points for Prowess, Energy and Luck, and I thought I could do better than my initial 8, 21 and 9 points, so I QUIT and QUIT till I got a reasonable respectable 9, 22 and 12 points. Then a quick INVENTORY showed I was carrying some coins and the good old trusty sword, which is better than a rusty sword, I suppose. COUNT COINS showed that I had just two. I was on a road with fields either side and the village to the east.

Mountains

Making my way to a stable I tried to buy a horse from the stableman, but he wouldn't let it go for less than four coins so I obviously had to increase my wealth somehow. Being kind to someone provided me with more coins and a map, and I was able to return to a hardware shop which did a nice line in lamps. Not so nice were the piranhas which prevented me swimming the river, and I wish the cartographer would let me past to have a look round upstairs in his posh house, but he won't. Not yet, anyway.

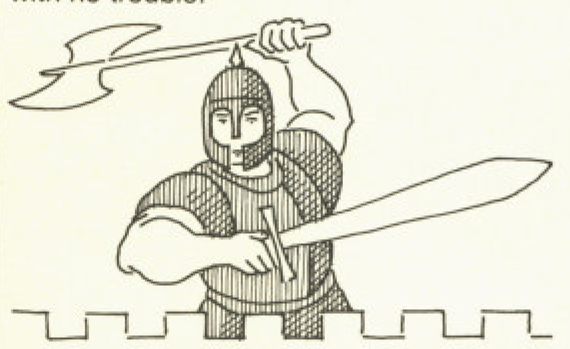
Temple of Vran takes you beyond the Mountains of Ket and has you going further eastwards with the hope of finding the Temple and bringing about the demise of Delphia. You begin this one in a passage, and if you think you can simply nip back from the second adventure to solve the first one restrospectively, I'm afraid the passage is blocked by a boulder, put there by the final guardian, a Zombie. Your way forward is blocked by a river, but it should take you all of about 10 seconds to figure out how to cross it — I wish all the problems were so easy. On second thoughts, no I don't, as it wouldn't be much of an adventure then.

Temple

The locations and objects here are rather strange, as you wander through a wilderness and suddenly meet up with an elephant, while further along is a sleeping kitten and a small trampoline. Hardly the most realistic of stories, but at least it sets you some unusual problems. Your way north is barred by some quicksand, and east by a cliff edge over which dangles a rope. Sadly the rope is fixed to something at the bottom of the cliff, not the top, so climbing down is not recommended. Nor can you pull the rope up. The place is populated by little people called warts, and my first encounter with one of these was when I had a flask of acid thrown over me. Fortunately I'd already taken preventive action, even if I hadn't realised what I was doing. Beyond here lies a door, which is difficult to open, but once through there you find yourself in a large room, off which is a wart kitchen, where no washing up has been done for years. Down some stairs is a ruby and a skeleton, with the skeleton somehow managing to block my way west, while upstairs there are lots of warts who insist on engaging you in combat. You can always run away, after the initial attack, but even so they somehow manage to get in a final blow as you go, and these slowly whittle away at your Energy points.

Having been warted to death several

times I tried *The Final Mission,* in which you confront the evil Vran himself, though your first task is to get out of the prison cell where you find yourself, with just a chair for company. Pretty easy, but then you find yourself in another cell with nothing more exciting than a bit of straw in the corner. The way out of here seemed a little unlikely, though you're sure to hit on it with the limited objects at your disposal. No sooner was I out of this cell though than I came face to face with something called the En Monster, and that polished me off with no trouble.



Though I wouldn't say *The Ket Trilogy* was the best set of adventures I'd ever seen, I'd certainly recommend them as giving good value for money and problems enough to keep you going for ages. When originally published on the Spectrum, a prize of a video recorder was being offered to the first to solve all three titles, and although that's now been claimed you can take some comfort in knowing that it wasn't won for some considerable time after the adventures appeared.

Less room for letters this month, but here are a few tips and pleas. Simon Ward of Whitehaven asked me for general help on *Sea Quest,* and also wanted to know how to open the trapdoor in the beach hut. General help is virtually impossible to give, unless you know exactly where a person is stuck and how far they've explored the adventure, so always try to ask fairly specific questions. The answer to Simon's specific question (written backwards) is that: DIAM REMEH TMORF YEKE HTDE ENUO Y.

Joy Birley of Eryl Don, Mona Terrace, Criccieth is stuck in *Franklin's Tomb,* unable to find a coin to use in the juke box and unable to get out of the pulley room and obtaining the Copper Star. If you can offer Joy any joy on those, let her know.

Rolf Michelsen of Sigrids vei 33, 7700 Steinkjer, Norway, kindly says thanks "for an excellent page in an excellent magazine. Continue like this!" Well we'll all try to, Rolf. He's completely stuck, he says, in *Return of the Ring,* and listed four questions: how to get the amulet from the trog; where to find the transportal eight miles into the forest; how to escape from the monsters in the forest; and how to use the rings to get some useful results. I've answered Rolf on some of those, which are a little lengthy to print backwards, but if you too can offer advice on those problems then do write to him in Norway.

Some of you may know the name of Neil Scrimgeour, who runs the ASCI column of the National Dragon User Group, and Neil writes to recommend a few Tandy adventures for anyone with the Dragon's sister machine. He says *Pyramid 2000* is good, being a Tandy implementation of the original *Colossal Cave,* while he also rates *Raaka-tu* and *Bedlam,* even if he is unable to get past the guard dog in the latter. Help to Neil at 125 Occupation Road, Corby, Northants NN17 1EG.



Finally, to show that some people do actually read the column, a letter from Nemesis, whose adventure *The Trial of Arnold Blackwood* I reviewed some months ago. It's a good adventure, but I complained that it didn't have a SAVE routine. Programmer Colin Harris has now incorporated this, and sent a new version to prove it, mentioning that copies are now also available from Touchmaster. If he sells a few more he may set about converting more Arnold adventures for the Dragon, so over to you, dear readers. In fact, it's over and out. ■

Dragon Answers

Alldream

COULD YOU possibly tell me how to change *Alldream* cassette to allow saving and loading text files to and from Dragon disk instead of cassette.

Ian Ferguson
10 Woodhall Road
Calderbank

IT IS not possible to change the *Dream* program to save to disk rather than cassette directly. However, one method is to have a Basic program running which calls DREAM and also handles commands such as SAVE and LOAD. The start address of a *Dream* text file can be found by ST=PEEK (27641)★256+PEEK (27642), assuming that Dream is loaded at its default address.

The text file is then saved by SAVE "filename", ST,27776, 27776. The file can simply be loaded by LOAD "filename", as the vectors were saved with the file these will be restored automatically on loading.

On the edge!

I HAVE recently purchased the Electroanalytical Technology interface, and have obtained a circuit diagram from Dr Mark Varney to allow simultaneous use of Dragon DOS with the interface.

The address decoding circuit is quite straight forward, but I cannot obtain edge connectors of the type in the Dragon cartridge port (2 × 20).

Can you give me the address of a supplier as I have tried numerous ones?

Martin Main
63 Grampian Road
Aberdeen

YOU CAN obtain 2 × 22 way edge connectors from your local Tandy store, or Maplins to name but two. These can be trimmed down to 2 × 20 way if required. The Tandy catalogue number is 276-1551, and the Maplin catalogue number is FG22Y. Maplins can be contacted on 0702 554155. Both should cost less than £3.

CoCo

COULD YOU please let me know what changes are required to run



the two following programs on the TRS CoCo:

1 Autorun (July 1984 issue)
2 Break Key Disable (October 1984 issue)

I would be most grateful as I have searched everywhere in vain.

David Powis
4 Prie Street
Farnworth
Bolton BL4 7PN

THIS IS one of a number of letters from Tandy owners asking about the Autorun listing. The only reason these routines will not work on a Tandy machine is that the ROM routines used are at different addresses. A version of the Break Key disable routine for the CoCo is listed below.

The ROM calls you will need to change in the AUTORUN listing are as follows:

Dragon	Tandy
33604	44102
46757	42089
33649	44147
39195	33597
48604	42987
33823	44321
33773	44271
33951	44446

Autorune

WHEN I was working on a program for writing runic script I found a very strange bug in my Dragon. I had set my Seikosha GP-100A in graphic mode, and intended to use a dual sound to warn of "line full". However, when the Printer was to Print the runes, it started with a long graphic string of CHR$(255). After a lot of frustration I finally managed to find that two consecutive sound commands somehow fed a string of characters to the Printer.

```
10 ?#-2,CHR$(8)
20 SOUND100,1
30 SOUND200,1
40 ?#-2
```

should just produce a line feed in line 40, but instead there is this strange string.

Could you explain this?

With kind greetings from a Dragon's lair in Sweden.

Nils Lindgren
Waxholm
Sweden

THE PROBLEM you have found is indeed a bug in the Dragon 32's ROM which was cleared up in the 64's ROM. The problem comes because the Keyboard and Printer share the same output PIA port, and the Printer Strobe line is part of the same address as the D/A converter used for generating sound. The bug is in the sound generation routines which occasionally strobe the printer line, which results in the Keyboard data going out to the Printer!

You can best avoid the problem by avoiding the use of SOUND and by keeping your hands off the keys whilst the program is running.

Define

I AM currently in the process of writing a program, in machine code, for the Dragon 32. In this program I need to define my own BASIC words. My only problem is how to convert variables and constants used by the words, into machine equivalents.

I would be grateful if you could tell me how to do this without producing 'syntax' and 'function call' errors.

Simon Joyce
41 King Street
Bradley
Bilston
West Midlands

THE FOLLOWING ROM routines can be used in your own command handlers for accessing numeric variables:

JSR 36433 returns the value of the following variable as an 8 bit number in the 'B' register.

JSR 36483 returns the value of the following variable as a 16 bit number in the 'X' register.

If either value is out of range, ie greater than 255 in the first case and greater than 65535 in the second case then a FC error is automatically produced.

Screen dumps

A NUMBER of letters have come in regarding problems with screen dumps.

The common problem is unexpected characters appearing in the middle of the screen dump, or unwanted blank lines appearing. These problems are all caused by the Dragon's printer routine. This has the annoying habit of outputting an extra 'space' character if it thinks the printer is at the start of a line when a carriage return code is to be printed.

The solution to the problem depends upon how the original screen dump program was written. For basic programs, add the command POKE 156,10 immediately before any ?£-2 commands. This will also have the effect of disabling the auto-LF feature, so you should set the dip switches in your printer so that a LF is not required.

For machine code screen dumps change any calls to the printer routine at 48410 (JSR 48410) to a call to the routine at 48373 (JSR 48373). This latter routine simply outputs the character in the A register directly to the printer without intercepting newlines and CR characters.

Finally, you can also try typing POKE 65283,PEEK(65283) AND 254 before using the screen dump program, this will disable interrupts and prevent 'extra' characters being printed.

Classified

DRAGON 32/64
BUSINESS/UTILITY SOFTWARE

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JET SET WILLY, menu driven, machine code program. Chose your own level of difficulty ie infinite lives, harmless arrows etc, £1 and SAE for instructions and listing, plan 50p extra. David Brown, 331 Mossy Lea Road, Wrightington Lancs, WN6 9SB.

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DRAGON 32 COMPUTER, and disk drive and DOS only, £215.00, separately £160 and £60. Phone (01) 346 5635 ask for Mahmood.

DRAGON 32K, unused, boxed, plus games, £60. Telephone 01-986 2658 Suhail.

DRAGON 32, thirty games, joysticks, books, cassette recorder, £98. Gosport 504216.

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DRAGON CHIPS, 6809E and 74LS783, £6.00 each, £55.00 for 10; 2764 EPROMS, £3.50 each, £30 for 10; Phone Nick evenings 0892 44070.

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DRAGONDOS EPROMS reprogrammed to include patches describes in *Dragon User* May '85 (plus corrections). Send your Dragondos Eprom (£5) or cartridge (£5.50) to P. G. Scott, 4 Badgerwood Drive, Frimley, Camberley, Surrey GU16 5UF.

ULTRADRIVE Dragon 32/64 also disk drive and 0S9 software and various other software, offers invited. Radnage 3270 for details.

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Palindromic number puzzles

***Gordon Lee** sets the challenge — Design Design provide the prizes*

PALINDROMIC numbers can provide quite a few surprises! These, as might be expected, are numbers which read the same forwards as backwards. Here are a few examples: 121, 14641, 40804, 44944, 1234321 and 4008004.

You may have noticed that as well as being palindromic, these numbers are also perfect squares. Even more curiously, their square roots are also palindromic. In fact, research shows that there is an infinite number of palindromic squares and many of these appear to have roots which are also palindromes.

It is not difficult to program a computer to print out a list of palindromic squares, and if this is done it will be seen that the majority have an *odd* number of digits. Amongst the lower orders of squares there are just two with an even number, 698,896 which is the square of 836, and 637,832,238,736 — the square of 798,644. One particularly unusual palindromic square is 111111111^2 = 12345678987654321.

Curious cubes

If palindromic squares are curious, then palindromic cubes are even more so. In general, every cube that is palindromic will have a palindromic cube root. (Note that this is not the same as saying that the cube of a palindrome will be palindromic). Every cube so far tested seems to obey this rule *with just one exception!*

Quite why this should be has not yet been demonstrated, nor does any proof exist that there is a second exception to this rule, but all cubes under $2.8 * 10^{14}$ have been tested by computer and all but one agree with the rule. I will not give this exception here as readers might enjoy solving this problem for themselves. Although it is not a particularly high number, its computation is slightly beyond the normal mathematical functions of the 'Dragon' and so a slightly more sophisticated approach is required.

Just as there are an infinite number of palindromic squares, so too are there an infinity of palindromic primes. Every palindromic prime must have an odd number of digits, with just one exception — the two-digit prime 11.

Number theorists will very soon realise that all palindromes with an even number of digits must automatically be exactly divisible by 11, and therefore — except for 11 itself — cannot be prime. Of particular interest are the four numbers 13931, 14741, 15551, and 16361. Apart from them all being palindromic primes, they have a common difference of 810.

Rep-units

Also of interest are the so-called rep-unit primes. These are numbers consisting of the single digit '1', and so are palindromic in a rather special way. Apart from 11, the only other known primes of this type were, for many years, 1111111111111111111 and 11111111111111111111111. More recently the number consisting of 317 ones has also been shown to be prime!

There is one particular problem relating to palindromic numbers which has been of interest to mathematicians for many years. The advent of high-speed computers has enabled the problem to be attacked further, but the problem's enigmatic nature still remains.

Take any positive integer, write down its digits in reverse order and add the two numbers together. Take this new total and repeat the procedure until the total becomes palindromic. For example, the starting number 139 becomes palindromic in just two steps:

```
 139
 931
----
1070
0701
----
1771
```

The theory is that all numbers should eventually become palindromic, but this is far from proved. Of the first ten thousand integers tested by computer, all but 249 of them have formed palindromes in under 25 steps. Of these, the longest palindrome is 16,668,488,486,661 formed after 20 steps from the starting values 6999 and 7998 (or their reversals).

Small exception

The smallest number that does not form a palindrome is 196, and this has been computed beyond many thousands of steps without obligingly forming a palindrome. This month's competition involves this value, 196. If this number is taken as described to the three hundreth step, somewhere along the number so formed at that stage will be the sequence of nine digits: 44 – – – – – 45. Can you fill in the missing five digits?

Of course, you will have to work out the rest of the number too!

Prize

THIS MONTH'S prize is 20 copies of Design Design's arcade game *Rommel's Revenge* — possibly the best implementation of *Battlezone* on any micro.

Rules

To win a copy of Design Design's *Rommel's Revenge*, you must both show the answer to the competition and how to solve it with the use of a Basic program written on your Dragon. Please do not send in a cassette containing you answer.

As a tiebreaker, complete the following sentence in 12 words or less: "I want to take on Rommel because . . ."

Your entry must reach Dragon User by the last working day in July. The winners will be announced in the October issue.

April Winners

Four perspicacious *Dragon User* readers managed to win themselves Dragon 64s donated by Compusense. They are Christine Richmond of Preston, J. Bowen of Rugeley, G. Hamilton of Stalybridge and R. Gosling of Alveston. They will be receiving written confirmation soon.

```
10 CLEAR 500:V$="1"
20 FOR P=1 TO 100
30 W$="":CARRY=0
40 FOR F=LEN(V$)TO 1 STEP-1
50 A=VAL(MID$(V$,F,1))
60 A=A*5+CARRY
70 IF A>9 THEN CARRY=INT(A/10):A=A-(CARRY*10):ELSE CARRY=0
80 Z$=STR$(A):W$=RIGHT$(Z$,LEN(Z$)-1)+W$
90 NEXT F
100 IF CARRY>0 THEN Z$=STR$(CARRY):W$=RIGHT$(Z$,LEN(Z$)-1)+W$
110 V$=W$:PRINT V$:NEXT P
```

This program should have appeared in June's competition page

RETURN OF THE RING

THE RING OF DARKNESS PART II

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